Participation Rate and Labour Force Growth in Canada

One of a series of papers
on medium and long-term
economic issues

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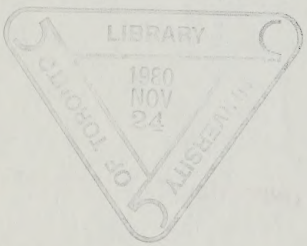
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Participation Rate and Labour Force Growth in Canada

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PREFACE

Since 1973, the real output of the Canadian economy has grown at a slower average rate than it did during the 1960s and early 1970s. Although this experience reflects in part the effects of cyclical slowdown in Canada as well as in other industrialized countries, it is also attributable in part to a slowing of the long-term or trend rate of growth of the Canadian economy during the 1970s.

It is important to make an assessment of whether the slower rates of trend growth which emerged in the 1970s will likely continue to obtain during the 1980s and 1990s. In this regard, the conventional framework within which long-run growth in gross national expenditure (GNE) is considered to be determined by the long-run rate of employment growth and the long-run rate of growth of labour productivity, provides a useful starting point for analysis. The projection of future trend rates of GNE growth is thus based on projections of each of the determinants of long-run employment growth (i.e., natural population increase, net immigration, growth in labour force participation rates, and the long-run evolution of unemployment rates) and long-run productivity growth.

The main focus of this paper is on the analysis of the determinants of participation rate movements in Canada since the early 1950s, and on the development of projections of participation rate growth over the period to the year 2000. A projection of working-age population growth is also provided in the paper. The projections of participation rate and working-age population growth yield a projection of labour force growth over the remaining two decades of this century. These projections suggest that the Canadian labour force will continue to grow significantly, but at a decelerating rate, through the 1980s and 1990s. In the absence of accelerating productivity growth, this suggests that the trend rate of growth of the Canadian economy will continue to decline over the foreseeable future.

This paper was prepared in the Long Range and Structural Analysis Division under the general direction of Scott Clark, Director of the Division. The paper has benefitted substantially from the comments of other members of the Department of Finance, as well as from discussions with persons at the Canadian Advisory Council on the Status of Women, the Economic Council of Canada, the C.D. Howe Research Institute, Informetrica Ltd., the Status of Women, the Canada Employment and Immigration Commission, and members of the Economics Departments of McMaster University and the University of Toronto. The responsibility for the views expressed in the paper, however, rests entirely with the authors.

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1. INTRODUCTION

In a long-run context, the components of labour force growth - natural population increase, net immigration, and changes in labour force participation rates - play major roles in determining the rate of economic growth. The 1963 level of the aggregate participation rate in Canada was almost identical to its 1950 value (although year-to-year fluctuations in the participation rate did occur). Changes in the participation rate thus had little or no effect on the growth realized by the economy over the 1950-1963 period. After 1963, however, the Canadian participation rate increased almost every year, so that by 1975 it had reached 58.8 per cent, a level 5.0 percentage points higher than the 1963 level. Further growth occurred between 1975 and 1979, with the participation rate rising from 61.1 to 63.3 per cent (revised labour force survey basis). The labour force also increased rapidly between 1963 and 1979, growing at an average annual rate of 3.2 per cent. This labour force growth accounted for about two-thirds of overall growth in Canadian gross national expenditure (GNE) over this period; of this portion of total GNE growth, about one-fifth was accounted for by participation rate growth alone.

The purpose of this paper is, first, to examine the evolution of participation rates in Canada over the past 26 years, in order to develop a basis for a projection of participation rates over the medium and longer term. The paper then combines the participation rate projection with a projection of working-age population growth, to provide a projection of labour force growth through the 1980s and 1990s.

Forecasting or projecting the future patterns of participation rate movements is an important element of any projection of the medium- and long-term growth prospects for the economy. The accurate projection of participation rates has proven, however, to be a difficult task. A number of projections of Canadian participation rates prepared in the 1960s and 1970s tended to underestimate the growth of the overall participation rate. In particular, the growth of adult female rates was more or less seriously underestimated, although some offset to this type of error came about through a tendency to overestimate the future levels of adult male participation.(1) Similar projection errors have been made in the official projections of United States participation

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(1) For example, see Frank T. Denton, Yoshiko Kasahara and Sylvia Ostry, Population and Labour Force Projections to 1970, Economic Council of Canada Staff Study No. 1 (Ottawa, 1964); Wolfgang M. Illing et al., Population, Family, Household and Labour Force Growth to 1980, Economic Council of Canada Staff Study No. 19 (Ottawa, 1967); and The Department of Finance, Canada's Economy - Medium-term Projections and Targets, (Ottawa, 1978).

rates prepared within the U.S. government.(1) This suggests that a re-examination of the factors determining participation rate changes would be useful.

The paper contains three more chapters. Chapter 2 reviews, in turn, the past patterns of changes in participation rates of adult women, adult men and teenagers, and outlines a projection of the participation rates of each of these groups over the remaining two decades of this century. Much of the discussion in this chapter relates to the participation rates of adult women; in the past, changes in women's participation rates have been very dramatic, and have accounted for most of the increase in the aggregate participation rate since 1963.

Chapter 3 then presents a projection of population growth in Canada to the year 2000, and combines this with the participation rate projection of Chapter 2 to develop a profile of projected labour force growth over the medium and longer term. Chapter 4 provides a summary of the analysis, and the main conclusions of the paper.

(1) Paul M. Ryscavage, "BLS Labor Force Projections: A Review of Methods and Results", Monthly Labor Review, Vol. 102, No. 4 (April 1979), pp. 15-22.

2. PARTICIPATION RATE CHANGES, PAST AND PROJECTED

2.1 Participation Rates of Adult Women

The participation rate of women aged 20 and over has risen every year since 1953. From 1953 until the early 1960s, the steadily rising adult female participation rate offset large declines in the participation rates of young persons, and modest reductions in the participation rates of adult men. Consequently, the aggregate participation rate remained roughly constant (see Chart 1). In the second half of the 1960s, the youth participation rate stabilized and, as increases in female participation more than offset continued declines in male participation, the aggregate rate began to rise. The increase in the aggregate rate became more pronounced through much of the 1970s, as continued strong increases in adult female participation rates were reinforced by strong increases in youth participation.

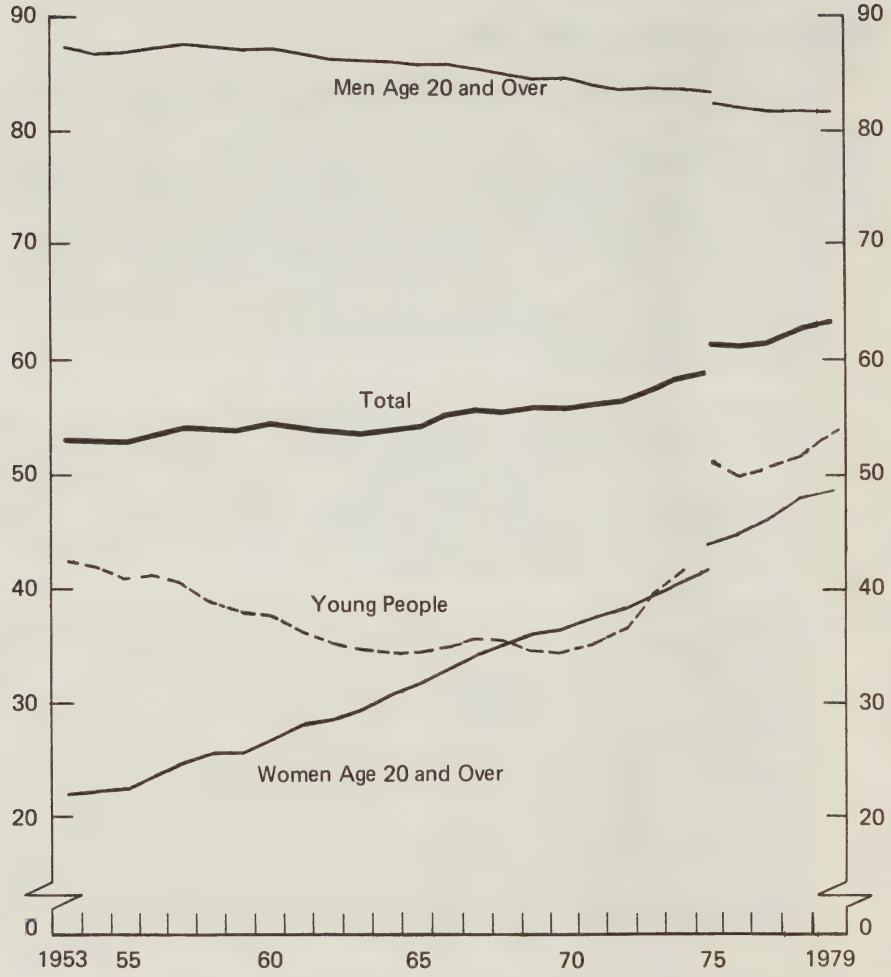
The rate at which the adult female participation rate has increased over this 26-year period has, of course, varied to a certain extent from year to year. These fluctuations notwithstanding, adult female participation has grown at a relatively steady rate, if periods several years in length are examined. For example, the average annual percentage increase in the adult female participation rate was 3.0 from 1954 to 1964, 2.9 from 1965 to 1975, and 2.6 from 1976 to 1979.

The apparent stability in the growth pattern of adult female participation suggests that cyclical movements in the economy may not have a large impact on changes in the participation rates of women. The results of a number of recent studies of participation rate changes in Canada provide some indirect support for this view. These studies have used different statistical techniques and different explanatory variables to attempt to capture cyclical impacts on participation, and have drawn on different sources and types of data. The results have also differed widely. For those adult female age groups for which significant explanatory relationships were obtained, Peter Kuch and Shmuel Sharir, Morley Gunderson, and Robert Swidinsky found a discouraged-worker effect operating, while Neil Swan and Lawrence Officer and Peter Andersen found the presence of an added-worker effect.(1) Pierre-Paul Proulx

(1) "Discouraged-worker effect" is a common term used to refer to a negative statistical relationship between unemployment rates (or some other indicator of cyclical activity) and participation rates. A negative unemployment-participation relationship is interpreted as meaning that, as unemployment rises, individuals become discouraged about their prospects of finding jobs, and withdraw from the labour market. The term "added-worker effect" describes a positive unemployment-participation relationship; an increase in unemployment is interpreted here as attracting more persons into the labour market to supplement family incomes which have fallen because of the unemployment of other family members.

Chart 1

Participation Rates of Men and Women Aged 20 and Over, and Persons Aged less than 20, and the Total Participation Rate, Canada, 1953-1979



(1) The historical series break in 1975, the year in which major revisions were made to the labour force survey. The most abrupt break occurs in the case of the less-than-20 group. Prior to the revisions, this group consisted of 14-19 year olds. With the revisions, it was redefined to comprise 15-19 year olds.

Source: Statistics Canada, *The Labour Force*, Cat. 71-001.

found both effects present for the adult female age groups. Moreover, for any particular age group at least one of these studies suggests the presence of either a discouraged-worker effect, an added-worker effect, or no significant cyclical effect at all. This lack of consensus in the empirical literature, along with the apparent stability of the growth in female participation, suggests that cyclical influences may not be important factors underlying changes in female participation, or at least that they are not detectable as such at the aggregate level.(1)

The major changes made to the Unemployment Insurance Act in 1971 have often been cited as a contributor to the strong growth in participation rates recorded in the early 1970s. Two potential effects of an enriched UI benefit program are often noted: additional persons may be attracted into the labour force by the possibility of drawing more generous benefits at some time in the future, and persons who would otherwise have left their jobs and the labour force may stay in the labour force to draw benefits for some period of time.(2) One implication of this argument is that UI-induced increases should show up mainly in the participation rates of women and young persons, since prime-age men are almost all in the labour force, and most do not have the flexibility to quit jobs and withdraw from the labour force.

An extensive literature on the impact of the 1971 UI revisions upon unemployment rates and participation rates in Canada is available. This literature, which encompasses a range of views on this issue, was reviewed in the preparation of the paper Canada's Recent Inflation Experience (Department of Finance, Ottawa, November 1978). That paper concluded that:

> The examination of participation rates of broad age/sex groups at the national level does not reveal any post-1970 participation rate changes which can be linked to the UI changes. Changes in the participation rates of adult women in the post-1970 period were well in line with historical experience.(3)

(1) See for example, Peter J. Kuch and Shmuel Sharir, "Added- and Discouraged-Worker Effects in Canada, 1953-1974", The Canadian Journal of Economics, Vol. XI, No. 1 (February 1978), pp. 112-120; Morley Gunderson, "Logit Estimates of Labour Force Participation Based on Census Cross-Tabulations", The Canadian Journal of Economics, Vol. X, No. 3 (August 1977), pp. 453-462; Neil Swan, "The Response of Labour Supply to Demand in Canadian Regions", The Canadian Journal of Economics, Vol. VII, No. 3 (August 1974), pp. 418-433; Pierre-Paul Proulx, "La variabilité cyclique des taux de participation à la main-d'oeuvre au Canada", The Canadian Journal of Economics, Vol. II, No. 2 (May 1969), pp. 268-277; Robert Swidinsky, "A Note on Labour Force Participation and Unemployment", The Canadian Journal of Economics, Vol. III, No. 1 (February 1970), pp. 146-151; and Lawrence H. Officer and Peter R. Andersen, "Labour-Force Participation in Canada", The Canadian Journal of Economics, Vol. II, No. 2 (May 1969), pp. 278-287.

(2) See, for example, C. Green and J.-M. Cousineau, Unemployment in Canada: The Impact of Unemployment Insurance, (Economic Council of Canada, Ottawa, 1976), p. 10.

(3) Department of Finance, Canada's Recent Inflation Experience, (Ottawa, 1978), p. 37.

It was also noted that an examination of regional and provincial data suggested that a UI-inducement effect on participation rates may have operated in Newfoundland, New Brunswick and Prince Edward Island, and may have reflected the high levels of disguised unemployment in those provinces. The size of the possibly UI-induced increase in participation rates in these provinces was such, however, that it did not show up in the national statistics.

The strong and steady growth in female labour force participation in Canada since the early 1950s has resulted in very dramatic changes in the work force and women's role in it. In 1953, an average of 22 per cent of women aged 20 and over participated in the labour force; by 1979, this proportion had more than doubled. Adult women accounted for about 18 per cent of the labour force in 1953, about 34 per cent in 1979. The growth in female labour force participation in Canada has been paralleled in a number of other industrialized countries in the postwar period. The patterns of growth in adult female participation rates in the United States in particular have been similar in nature to Canadian patterns. Chart 2, which provides annual participation rates of four age groups of adult women for Canada and the United States, shows that similar sorts of changes in female participation rates have occurred in the two countries since 1953. Table 1 provides rates of growth of adult female participation rates in Canada and the U.S., for selected sub-periods since 1953. The data indicate that movements in adult female participation rates in the period 1954-1959, in the 1960s, and in the 1970s, were also similar in the U.S. and Canada.(1) For the

Table 1

Average Annual Percentage Rates of Growth of Participation Rates of Adult Women, by Age Group, Canada and the United States, Selected Periods

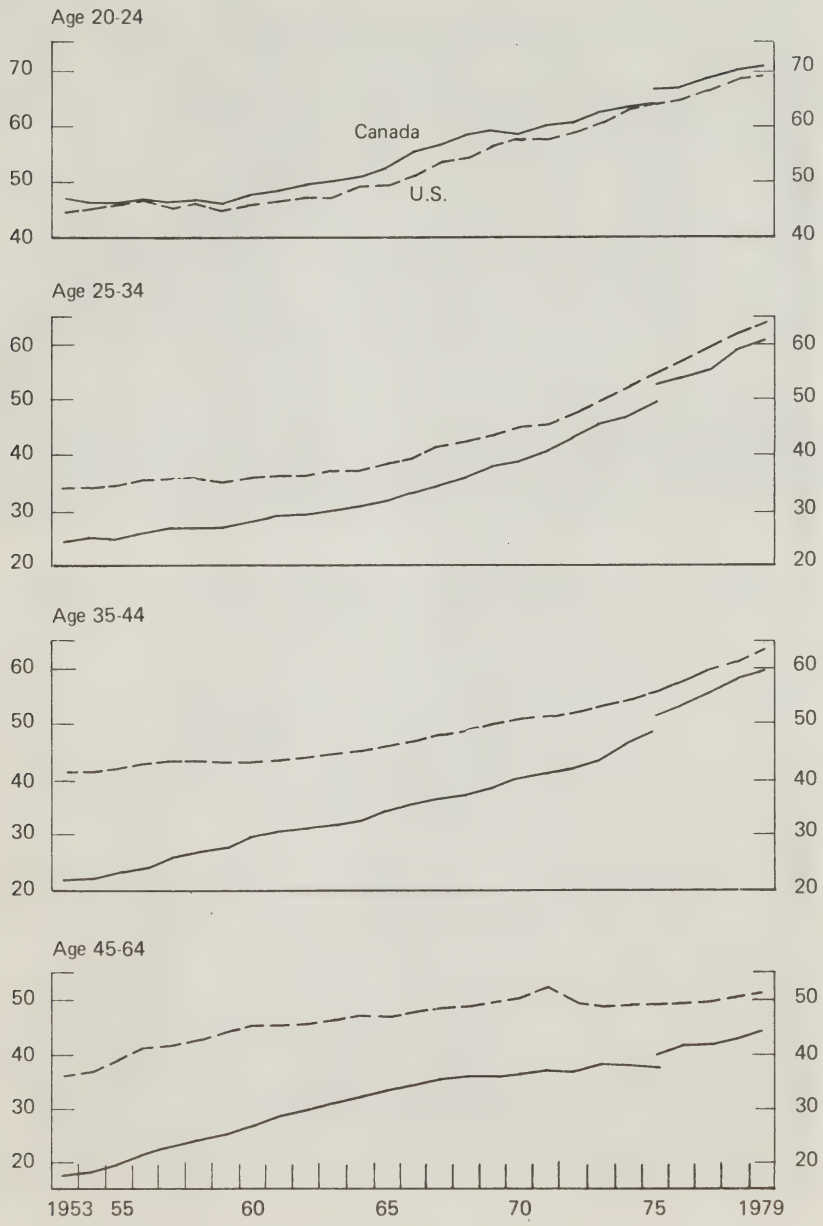
	Age Group							
	20-24		25-34		35-44		45-64	
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
1954-1959	-0.2	0.3	1.7	0.6	3.7	0.8	6.5	3.5
1960-1969	2.5	2.3	3.7	2.2	3.5	1.4	3.5	1.2
1970-1979	1.5	2.0	4.1	3.9	3.8	2.5	1.5	0.3

Source: Canadian data, Statistics Canada, The Labour Force, Cat. 71-001; U.S. data, Bureau of Labor Statistics, Handbook of Labor Statistics, and Employment and Earnings.

(1) There are some differences in the participation behaviour of white and non-white women in the U.S. However, participation rate movements of all women in the U.S. follow the patterns of white women closely. The Canadian-U.S. comparison made above would not be materially affected if the participation rates of white U.S. women were used instead of those for all U.S. women.

Chart 2

Participation Rates of Adult Women, by Age Group, Canada and the United States, 1953-1979



(1) The breaks in the series for Canada reflect the 1975 revisions to the labour force survey.

Source: Canadian data, Statistics Canada, *The Labour Force,* Cat. 71-001. U.S. data, Bureau of Labor Statistics, *Handbook of Labor Statistics,* and *Employment and Earnings.*

younger groups, the magnitudes of the rates of change have also been comparable. In the case of the older groups, the average annual growth rates have been noticeably stronger in Canada, although the broad patterns of change have been similar.

A number of general factors underlie the growth of female labour force participation in Canada. Increasingly, women are joining the labour force and working for the same reasons for which men work - to provide for their families, and to satisfy personal goals.(1) The rising material aspirations of families can often be satisfied only if husband and wife both work outside the home. In a significant proportion of families, wives' wage and salary earnings are instrumental in keeping their families' incomes above the poverty line.(2) As well, women's personal aspirations have changed dramatically since the early 1950s: women are more career-oriented and much less willing than previously to simply manage homes and raise children. In this regard, the growth of women's movements both reflects this attitudinal change, and is a measure of the fact that many women feel much more change, in the same direction, is required. The changes in aspirations and orientation which have occurred have been reflected in, and reinforced by, steady increases in the average educational attainment of women.(3) Increased schooling has opened new career possibilities for women, providing them with access to more challenging and satisfying work as well as increasing the wages they can command. As the data in Table 2 show, in Canada educational attainment is strongly and positively correlated with women's labour force participation.

In addition, a large proportion of women who are in the labour force are the sole support for either themselves alone, or themselves and their families.(4) In this context, the rising incidence of marriage

(1) The major developments in birth control techniques since the 1950s which have permitted couples to plan the number and the timing of their children, and the profound change in attitudes with respect to desired family size, have been closely related to the increased labour force participation of women over much, but not all, of the period since the early 1960s. This issue is discussed more fully in Section 2.1.1 below.

(2) A recent National Council of Welfare study reported that 9 per cent of two-partner families in Canada had incomes below the poverty line in 1975; this figure would have risen to 14 per cent if wives had not worked outside the home. See The National Council of Welfare, Women and Poverty, (Ottawa, 1979) pp. 20-21.

(3) The proportion of women aged 18-24 enrolled full-time in post-secondary institutions rose from 8.7 per cent during the 1962-1963 academic year to 17.9 per cent during the 1976-1977 academic year. Increases in this share occurred each year from 1962-1963 to 1976-1977. See Statistics Canada, Education in Canada, Cat. 81-229. Similar changes have occurred in the U.S.

(4) About 40 per cent of all women in the labour force are single, widowed, divorced or separated. See Statistics Canada, The Labour Force, Cat. 71-001.

Table 2

Participation Rates of Adult Women by Educational Attainment, Canada, 1976

	Level of Schooling				
	Grade 11 or Less	Grade 12-13	Some Post-Secondary Non-University	Some University	University Degree
Total	34.3	54.9	57.0	64.0	70.9
20-24	49.1	72.7	75.5	77.0	81.9
25-34	42.0	55.1	59.8	66.5	74.2
35-44	47.2	58.3	61.5	65.5	69.8
45-54	43.1	55.2	60.0	64.1	69.2
55-64	28.3	39.8	46.4	49.8	54.2
65 and over	5.4	7.7	8.8	11.6	14.0

Source: Statistics Canada, 1976 Census of Canada, Supplementary Bulletins, Economic Characteristics, Female Labour Force Participation Rates by Level of Schooling, Age, Marital Status and Presence of Children, Cat. 94-836 (Bulletin 10SE7).

breakdown in Canada has become an increasingly important factor in increasing the participation rate of women.(1)

A number of other factors have also been identified as having contributed to the growth over time of female labour force participation. One of these has been the expansion of the service sectors of industrialized

(1) Divorcees comprised by far the smallest marital-status group among Canadian women in 1971, accounting for only 1.35 per cent of the female population aged 15 and over in that year. Very rapid growth in the share of the population accounted for by divorcees occurred over the next five years, reflecting the liberalization of divorce laws in Canada. The number of divorcees grew by 78 per cent between 1971 and 1976; in 1976, divorcees accounted for 2.1 per cent of women aged 15 and over. Despite the fact that the (census) participation rate of divorcees fell between 1971 and 1976, the high level of this rate meant that the increase in the population share of divorcees may have accounted for as much as 8 per cent of the total increase in the (census) participation rate of women aged 15 and over, between 1971 and 1976. See Statistics Canada, 1976 Census of Canada, Labour Force Activity: Labour Force Participation Rates by Age and Sex and by Marital Status and Sex, 1971 and 1976, Cat. 94-804 (Bulletin 5.5); and Vital Statistics, Cat. 84-205.

economies. This has facilitated the entry of many women into the work force, in part because some of the fastest-growing service sector industries offer substantial flexibility in the scheduling of working time.(1) The growth of real wages over time has also been cited as a force attracting women into the labour force. This particular proposition, however, is more doubtful, as is shown in Appendix 1.

A wide variety of factors thus probably underlies the surge in female participation rates which has occurred since the 1950s. While some of these major factors can be easily listed, it is difficult, if not impossible, to quantify the effects which each of these influences has had in stimulating increased labour force participation on the part of women. In turn, this makes a projection of future patterns of movement in female participation rates difficult: judgements must be made not only regarding the likely future evolution of the various forces which have worked to increase female labour force participation in the past, but also with respect to how these forces, taken together, will influence the participation rates of women in the future.

In light of the evident strength of the forces which have stimulated increased female labour force participation in the past, it seems most reasonable to assume that for the most part they will continue to work towards encouraging higher female participation rates in the future. The possible exception to this general statement relates to desired family sizes and the future course of fertility rates. The total

(1) The availability of work on less than a full-time basis seems to be a particularly important factor in facilitating the labour force participation of women with young children. The proportion of working mothers who work on a part-year or part-time basis is strongly, and inversely, related to the age of their youngest child. (See Statistics Canada, "Working Mothers and their Child Care Arrangements in Canada, 1973", The Labour Force, Cat. 71-001 (September 1975); for additional evidence on this point see Allan G. King, "Industrial Structure, The Flexibility of Working Hours and Women's Labor Force Participation", The Review of Economics and Statistics, Vol. LX, No. 3 (August 1978), pp. 399-407). About 35 per cent of the growth in female employment over the past 26 years has been accounted for by part-time employment, much of it located in the service sector which provides most of the part-time jobs in Canada. While the growth of the service sector and the part-time work it generates has clearly been an important factor facilitating the growth of women's participation, the inference should not be drawn that women's attachment to the labour force has as a consequence become substantially more casual. One admittedly not perfect measure of attachment is the number of persons working 50-52 weeks a year as a proportion of the number of persons working at any time during the year. This measure shows that, between 1964 and 1974 for example, the "attachment" of women 25 years of age and over declined from 69.7 to 68.0 or by 1.7 percentage points. This was a much smaller decrease than the 4.9-percentage-point decline in the "attachment" of men aged 25 and over from 94.5 to 89.6. (The source of these data is Statistics Canada, Annual Work Patterns of the Canadian Population, 1964, Cat. 71-506; and unpublished data from the 1974 Annual Work Patterns Survey.)

fertility rate in Canada is now at a level below that required for the population to reproduce itself, and seems unlikely to fall much further.(1) The population projection outlined in Chapter 3 assumes that the fertility rate will fall only marginally, from the present level of about 1.8, to 1.7 by 1990 and then remain constant thereafter. It may appear as though the stabilization of the fertility rate could tend to prevent the participation rates of women in the prime childbearing age groups from rising much above existing levels, and thus act to slow the growth rate of the overall female participation rate. For this reason, it is worth examining the relationship between childbearing and female labour force participation in some detail.

2.1.1 The Relationship Between Childbearing and Female Labour Force Participation

Charts 3 and 4 compare the movements of the total fertility rate and the participation rate of women aged 20-34 since 1953 in Canada and the U.S. respectively. Eighty per cent or more of all children born in North America are born to women aged 20-34. Thus the comparison of the participation rate of this age group with the fertility rate should make clear the broad outlines of the relationship between fertility and female labour force participation. The discussion in this section covers the years 1953-1978; no estimates of fertility rates are available yet for 1979.

Three periods are of interest. In both Canada and the U.S., fertility rates increased through most of the 1950s; during the same period, only very modest increases in the participation rates of women aged 20-34 in both countries were recorded. As fertility rates began dropping in the late 1950s and early 1960s, however, the participation rates of women aged 20-34 began to rise more strongly. This relationship between falling fertility rates and rising participation rates was maintained through the early 1970s. In the mid-1970s, however, the rate of decline in fertility slowed down markedly, and fertility rates levelled out in each country. The participation rates of the main childbearing group did not, however, show any tendency to slow their rates of increase. In Canada, the absolute increase in the participation rate of this age group of women from 1973 to 1978 was as large as it had been in any five-year period since the fertility rate peaked in 1959; the average annual increase of 3.0 per cent in this participation rate over the period 1974-1978 was only slightly lower than the 3.3-per-cent average

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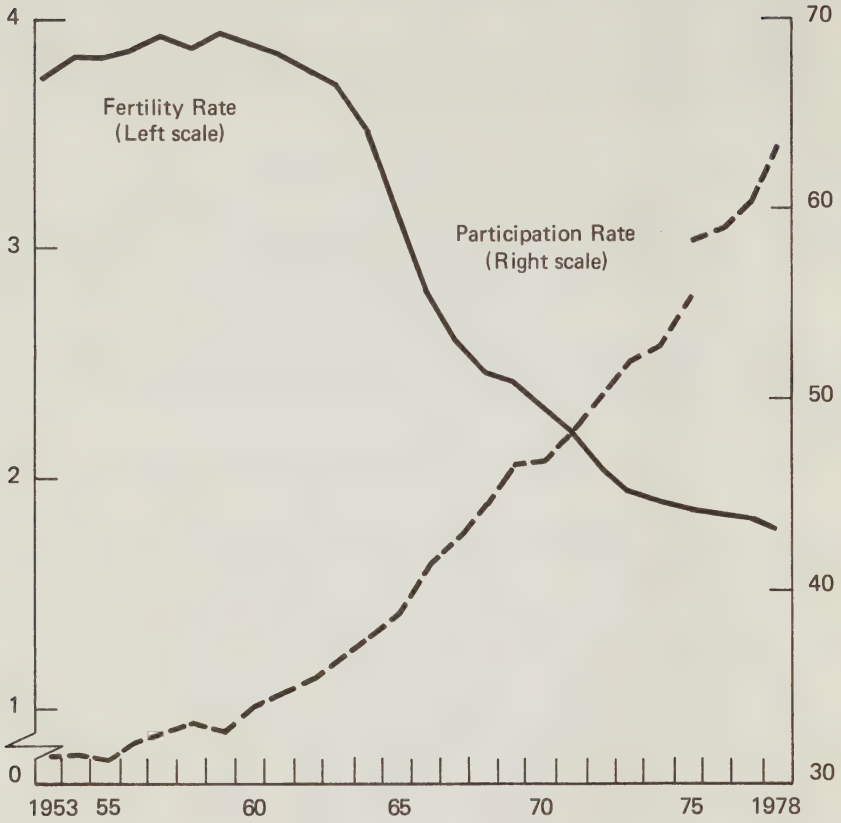
(1) An age-specific fertility rate is the number of children born in a particular year to women of a particular age expressed in percentage terms or per thousand women. The total fertility rate is defined as the sum across the age groups in the childbearing cycle of all the age-specific fertility rates. The total fertility rate in a given year may be interpreted as the average number of children which would be born to a cohort of women whose pattern of age-specific fertility rates over their childbearing cycle replicated the pattern which occurred in the given year. In Canada at this time, a total fertility rate of approximately 2.1 corresponds to the level of fertility required for the population to reproduce itself. The Canadian fertility rate has been below 2.1 since 1972 (see Chart 3). For purposes of comparison, the 1959 level of the fertility rate was 3.9.

Chart 3

The Total Fertility Rate, and the Participation Rate of Women Aged 20-30, Canada, 1953-1978

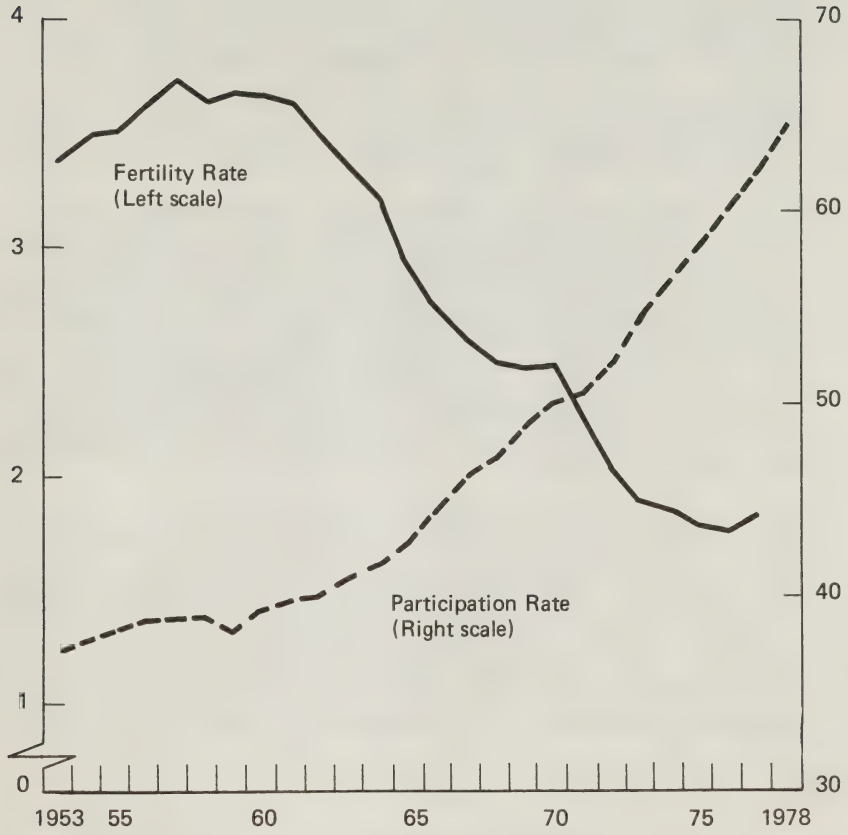


(1) The participation rate series breaks in 1975, the year in which major revisions were made to the labour force survey.
(2) The 1978 value shown here for the fertility rate is a forecast estimate.

Source: Statistics Canada, *Vital Statistics, Volume 1*, Cat. 84-204, and *The Labour Force*, Cat. 71-001.

Chart 4

The Total Fertility Rate, and the Participation Rate of Women Aged 20-34, United States, 1953-1978



(1) No estimate of the 1978 U.S. fertility rate is yet available.

Source: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States*; and the Bureau of Labor Statistics, *Handbook of Labor Statistics,* and *Employment and Earnings*.

annual growth recorded from 1959 to 1973.(1) In the U.S., the participation rate of women aged 20-24 grew by 3.4 per cent per year from 1973 to 1978, a faster rate of increase than had been recorded over any five-year period between 1957 and 1973.

The direction of causality linking fertility and participation rates is not obvious. The link may run from fertility to participation: the realization of the desires on the part of couples to have small families would permit wives to participate longer in the labour force. Equally plausibly, causality may run from participation to fertility: the desire on the part of married women to work would influence in an important way the desired number of children, and their timing.(2) Perhaps most likely, causality runs in both directions, with participation and childbearing decisions being determined simultaneously.

Despite the difficulty in separating cause and effect, the patterns of fertility and participation rates which have obtained in Canada and the U.S. since the early 1950s suggest the following observations. First, participation and fertility rates were evidently closely related until the early 1970s, with high and rising fertility rates being accompanied by only slowly growing participation rates in the 1950s, and falling fertility rates accompanying sharply rising participation rates in the 1960s and early 1970s. Second, this relationship appears to have been weakened considerably, as the levelling off of fertility rates in the mid-1970s has been accompanied by the continued strong expansion of participation rates.

This may have been the result of a number of factors. For a variety of reasons, North American women are less willing now than previously to postpone careers or to give up job status and earnings in order to raise children. Many couples and families have probably adopted life styles and have acquired financial obligations which do not permit the withdrawal of the wife or mother from the labour force for a prolonged period of time. The stigma which often used to be attached to the working mother is much diminished. Finally, it is also much easier for mothers to make child care arrangements and work when the number of

(1) The 1973-1978 increase is corrected for the upward shift of this participation rate resulting from the 1975 labour force survey revisions.

(2) U.S. surveys which seek to determine how many children women expect to have during their lifetime find that the answers are related to the labour force status of respondents: women in the labour force indicate that they expect to have fewer children than women not in the labour force. Allyson Sherman Grossman, "Almost Half of All Children Have Mothers in the Labor Force", Monthly Labor Review, Vol. 100, No. 6 (June 1977), pp. 41-43, p. 43.

children in the family is small, as it is now, than when the average number of children in a family is close to four, as it was in the 1950s.(1,2)

An interesting perspective on this issue is provided by the data in Table 3. Table 3 compares participation rates of American wives in March 1960 and March 1977, for two age groups (under 35, and 35 and over), classified by the presence of children in the home. Over this 17-year period, in both age groups, the participation rates of wives with children present increased more sharply in both relative and

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(1) Evidently, in most cases, arrangements are made to have small children looked after by relatives, neighbours, or family friends. (See Statistics Canada, "Working Mothers and their Child Care Arrangements...", op. cit.) Currently, authorized day care facilities in Canada provide spaces for only a small fraction of the total number of small children of working mothers. The number of spaces available in authorized day care centres in Canada grew by 54.2, 105.8, 26.8 and 19.4 per cent per year during the years 1973 through 1976 respectively, before dropping marginally in 1977, and recording virtually no growth in 1978. The early growth of child care facilities seems to have been in response to the growth in demand for such facilities. This demand was stimulated by the introduction of direct subsidization of a large portion of child care expenses for low-income families, as well as by the tax treatment afforded such expenses. In 1972, up to $500 per child of child care expenses became allowable deductions in computing taxable income in Canada; this ceiling was raised to $1,000 in 1976. (The income tax treatment of child care expenses in the U.S. was significantly liberalized during the mid-1970s. See Grossman, op. cit., p. 44.) The slowdown and subsequent cessation of growth in day care spaces in Canada during the second part of 1970s has been attributed to sharply rising costs of providing day care services. These costs were passed on in price increases as governments insisted on cost recovery for day care services. There was also a reduction in the effective degree of subsidization of day care services available to two-income families. (See Health and Welfare Canada, Status of Day Care in Canada, various issues 1972-1978.) The withdrawal of children of families with two incomes from day care facilities in response to the higher price of day care apparently led to the closing of many facilities, curtailing the growth of spaces.

(2) A recent U.S. Bureau of the Census report provides data on the nursery school and kindergarten enrolment rates of children aged three and four in the U.S., cross-classified by the number of other children in the family. The data show that children aged three and four in small families had significantly higher enrolment rates than children in large families. The study suggests that:

> Among the possible reasons for differences in (children's) enrollment rates by size of family are that large families may be less able to afford the (nursery school) tuition than small families; mothers with more children may be less inclined to join the labor force and more likely to stay home with their children; and large families may be more likely to have older children to care for younger siblings. (P. 5)

See U.S. Department of Commerce, Bureau of the Census, Nursery School and Kindergarten Enrollment of Children and Labor Force Status of Their Mothers, October 1967 to October 1976, (February 1978).

absolute terms than the rates of wives with no children aged less than 18 present. In addition, the sharpest increases occurred in the case of wives with children less than six years old, i.e., the group for whom the inhibiting effect of children in the home would be expected to be the strongest. Among wives less than 35 years old, the participation rate of those with children aged 6-17 rose by 18.8 points over the period, a relative increase of 45.3 per cent; the participation rate of those wives with children under six years old rose by 21.6 points, a relative increase of 119.3 per cent. The same phenomenon is apparent in the data relating to wives aged 35 and over. In addition, the sharp increase in the participation rate of older wives with children aged 6-17 was sufficient to raise the March 1977 level of the participation rate for this group to almost the level of the group with no children under age 18.

Table 3

Participation Rates of Married Women,(1) by Age Group and the Presence of Children in the Home, United States, March 1960 and March 1977

	Under Age 35	Aged 35 and Over(1)
With no children under age 18		
1960	61.1	46.4
1977	79.0	55.8
Absolute increase	17.9	9.4
Relative increase (per cent)	29.3	20.3
With children aged 6-17 only		
1960	41.5	38.5
1977	60.3	54.2
Absolute increase	18.8	15.7
Relative increase (per cent)	45.3	40.8
With children under age six		
1960	18.1	20.0
1977	39.7	36.6
Absolute increase	21.6	16.6
Relative increase (per cent)	119.3	83.0

(1) Married women (husbands present) aged 55 and over with no own children under 18 years are excluded from these data.

Source: Paul Ryscavage, "More Wives in the Labor Force Have Husbands with 'Above-Average' Incomes", Monthly Labor Review, Vol. 102, No. 6 (June 1979), pp. 40-42.

These data show that there has been a profound change in the labour force behaviour of women in the U.S. with children, especially small children, present in the home. Comparable data covering a shorter period of time indicate that similar changes have occurred in Canada as

well. Table 4 presents census estimates of the participation rates of married women with husbands present, classified by age and the presence of children, for May 1971 and May 1976. Between 1971 and 1976, in both the 15-34 and 35-44 age groups, the participation rates of women with children present in the home increased more sharply in both relative and absolute terms than the rates of women with no children present. More importantly, the participation rates of wives with children under six years old increased at least as much in absolute terms, and significantly more in relative terms, than the rates of women whose children were all aged six and over.

Table 4

Participation Rates of Married Women, Husbands Present, by Age Group and the Presence of Children in the Home, Canada, May 1971 and May 1976

	Aged 15-34	Aged 35-44
With no children present		
1971	73.9	59.4
1976	77.5	65.5
Absolute increase	3.6	6.1
Relative increase (per cent)	4.9	10.3
With children, all over six		
1971	46.0	44.2
1976	54.9	53.6
Absolute increase	8.9	9.4
Relative increase (per cent)	19.3	21.3
With children under six		
1971	28.0	25.4
1976	36.9	35.8
Absolute increase	8.9	10.4
Relative increase (per cent)	31.8	40.9

Source: Statistics Canada, 1971 Census of Canada, Labour Force Activity - Work Experience, Female Labour Force Participation by Schooling, Marital Status, Age, and Presence of Children, For Canada and the Regions, Cat. 94-774, Vol. 3, Part 7 (Bulletin 3.7-4); 1976 Census of Canada, Supplementary Bulletins: Economic Characteristics, Female Labour Force Participation Rates by Level of Schooling, Age, Marital Status and Presence of Children, Cat. 94-836, (Bulletin 10SE7).

An additional perspective on the changes in participation patterns of women in the prime childbearing groups can be obtained by examining the participation behaviour over time of particular cohorts of women.(1)

(1) In this context, a cohort is a group of persons of similar age, for whom data are available at different points in time.

The amount of longitudinal data readily available in Canada is somewhat limited. Nonetheless, the existing data, particularly when considered in the light of similar information available for other countries, provide a useful supplement to analysis based on cross-section and time-series data.

Chart 5 plots participation rates of selected cohorts of women.(1) The data are drawn from the labour force surveys of 1955, 1965 and 1975. Since the cohort groups each cover an age span of 10 years, a maximum of three data points is available for each cohort.(2) As an orientation to the chart, consider cohort number 5. In 1955, this cohort spanned the age range 35-44; the chart shows that the participation rate of this group was about 23 per cent in that year. By 1965 the participation rate of this cohort had risen to 37 per cent; by 1975, when the age range covered by the cohort had reached 55-64, its participation rate had fallen to 29 per cent.

Traditionally, an age-group profile of female participation rates has had two peaks. Participation rates have risen until ages 20-24, then have fallen sharply through ages 25-29 and 30-34, before rising to a second peak reached between the ages of 40 and 55. The decline in participation between ages 20-24 and 25-29 has been related to childbearing and the raising of children. Although the data plotted in Chart 5 distinguish only 10-year age groups, they nonetheless indicate clearly the important change in the age profile of participation rates which is occurring. Chart 5 shows, first, a steady upward shift in the participation rate profiles of successive cohorts. This is, of course, simply another way of describing the increase in female participation rates which has occurred over the past 25 years. More interesting is the change in behaviour between cohorts 3 and 2. Cohort 3, comprising women born in the decade 1931-1940, recorded a traditional profile of participation rates, which dropped between ages 14-24 and 25-34 before rising again between ages 25-34 and 35-44. Cohort 2, consisting of women born from 1941 to 1950, registered participation rates which rose sharply between ages 14-24 and 25-34. This is a significant departure from the traditional female participation rate pattern; the increase in the participation rates of cohort 2 between ages 14-24 and 25-34 parallels the traditional pattern of male participation rates, which tend to rise strongly across these age groups.

Labour force survey data do not provide information for five-year age groups above age 24; these data thus do not indicate how the participation rate of women aged 25-29 is changing relative to that of women aged 20-24. The most recent Canadian (census) data available on participation rates by five-year age group show that the participation rate of the 25-29 age group in 1976 was lower than the 1971 rate of the

(1) This chart is based upon a chart contained in a recent Canada Employment and Immigration Commission internal working paper. See Serge Bertrand, A Cohort Analysis of Female Labour Force Participation, Strategy, Policy and Planning Group, Employment and Immigration Canada, (November 1978).
(2) For the cohorts aged 14-24 and 25-34 in 1975, there are respectively only one and two observations available.

Chart 5

Participation Rates of Women by Cohort, Canada, 1955-1975

Cohort Number	5	4	3	2	1
Born In	1911-1920	1921-1930	1931-1940	1941-1950	1951-1960

Source: Employment and Immigration Canada, *An Analysis of Female Labour Force Participation*, November, 1978.

20-24 age group.(1) Thus despite the new pattern of 10-year age group participation rates which emerged, the traditional pattern of participation rate movement between age groups 20-24 and 25-29 continued through the early 1970s. Table 5 shows that the traditional pattern has been reversed in the U.S., with women aged 25-29, beginning in 1976, recording higher participation rates than they did five years earlier. The same phenomenon has occurred in some other western countries (e.g., Denmark and Sweden). In others (e.g., West Germany), the gap between the participation rates of women aged 25-29 and the rates they recorded five years earlier is being closed steadily.(2)

Table 5

Participation Rates of Women Aged 20-24 and 25-29, United States, Selected Years

20-24		25-29	
1968	54.6	1973	51.8
1969	56.8	1974	54.8
1970	57.8	1975	57.1
1971	57.8	1976	59.3
1972	59.1	1977	61.8
1973	61.2	1978	64.3

Source: U.S. Bureau of Labor Statistics, Employment and Earnings.

The cohort data available for Canada thus indicate that a major shift in the age pattern of participation rates is taking place, as women move through the prime childbearing ages. The 10-year age group data show that women's participation rates are now increasing as they move between the 15-24 and the 25-34 age groups, and are thus beginning to follow the traditional male pattern. Five-year age group data indicate that the participation rate of women aged 25-29, at least in 1976, was still lower than the participation rate of the same cohort five years earlier. This traditional pattern has been reversed in the U.S. and in two Scandinavian countries, and is in the process of being reversed in other countries as well. It is highly probable that the same reversal is occurring at present in Canada.

On balance, it seems evident that the traditional relationship between childbearing and the participation rates of women in the prime childbearing age groups has changed very dramatically. The inhibiting effect of children upon women's labour force participation has tended to become diminished in recent years. Since there are no obvious reasons why this trend should not continue, it appears as though it

(1) See C.D. Howe Research Institute, Policy Review and Outlook, 1979 - Anticipating the Unexpected, (Montreal, 1979), p. 143.
(2) International Labour Organization, Yearbook of Labour Statistics.

would be invalid to project a flattening out of the labour force participation rate of women in the childbearing age groups, solely because the fertility rate is not expected to decline significantly in the future.

2.1.2 Adult Female Labour Force Participation in the Future

Given the foregoing analysis of the relationship between childbearing and female labour force participation, there appear to be no compelling reasons for expecting the growth of female labour force participation to slow down abruptly. Indeed, it seems much more likely that the participation rate of adult women will continue to rise strongly, at least over much of the next decade.

The development of projections of female participation rates over the balance of this century necessarily demands the exercise of a considerable amount of judgement. One method of preparing such projections would be to estimate regression equations explaining the behaviour of women's labour force participation in the historical period, and use these equations as the basis for projection. The variety and the complex nature of the forces which have contributed to the increase in female participation rates since the early 1950s suggest that their effects would probably have to be captured in such equations with time trends. The long-term projections would then be driven in part by time trends, and would be crucially dependent upon the particular specifications of the time trends employed in the estimating equations.

A more direct approach to the projection problem has been taken here. The projection methodology used in this paper is to specify a certain minimum male-female participation rate differential which may reasonably be expected to obtain in the future, and then to specify how quickly that minimum differential will be reached. This approach thus sets out explicitly the judgements being made with respect to the future strength of the forces working to increase female labour force participation.

In 1953, the participation rate of women aged 25-54 in Canada was a full 75 percentage points lower than the corresponding male rate. By 1979, this differential had narrowed to about 37 percentage points. The corresponding male-female participation rate differential in the U.S. was about 58 percentage points in 1953, and about 34 percentage points in 1978. In Sweden, where much more effort has been expended on ways of facilitating the participation of women in the labour force than has been the case in North America, the same participation rate differential was 30 percentage points in 1970, 16 percentage points in 1978.

There are obviously a good many uncertainties associated with the projection of adult female participation rates to the year 2000. For this reason, two projections of adult female participation rates are presented in Chapter 3. In the one case, the male-female participation rate differential for the adult age groups beyond the childbearing ages for women is assumed to decline to 10 percentage points in 2000; in the other case, the differential is eliminated. The adult female participation rates projected to 1985 are identical in the two cases, but diverge thereafter.

2.2 Participation Rates of Adult Men

The participation rate of men aged 20 and over remained relatively constant through the 1950s, before beginning to fall in the early 1960s (see Chart 1). A gradual decline in the adult male rate occurred through the 1960s, and continued in the 1970s, although at a reduced rate.

Chart 6 provides the participation rates of four age groups of adult men - 20-24, 25-54, 55-64, and 65 and over - from 1953 to 1979. These data show that changes over this period in the aggregate adult male participation rate resulted from different patterns of movements in the participation rates of the different groups. These patterns are examined in some detail in this section. Chart 6 also shows, for comparative purposes, the participation rates of corresponding groups in the U.S. As has been the case with adult women, the participation rates of the different age groups of men have tended to move in broadly similar fashion in the two countries over the past 26 years.

2.2.1 Participation Rates of Men Aged 25-54

In Canada, men aged 25-54 accounted for 70 per cent of the male labour force 20 years of age and over in each of 1953 and 1979. Because of the weight which this group carries in the total, the pattern of movement in the total adult male participation rate closely follows that of the 25-54 year old group. The participation rate of 25-54 year old men has been constant over most of the 26-year period, with the exception of the last half of the 1960s and the early 1970s. From 1966 to 1972, the participation rate of this group recorded a modest decline, in total about one percentage point over the period. In the U.S., the participation rate of men aged 25-54 has fallen slowly but steadily, from 97.4 per cent in 1955 to a level just over 94 per cent in the latter half of the 1970s.

Men aged 25-54 have traditionally had the highest degree of attachment to the labour force of any of the major age-sex groups. Given the traditional although diminishing role which men in this age group have had as primary income earners in their families, and the large share which they comprise of the labour force, it is important to attempt to identify the sources of even small changes in their participation rates.

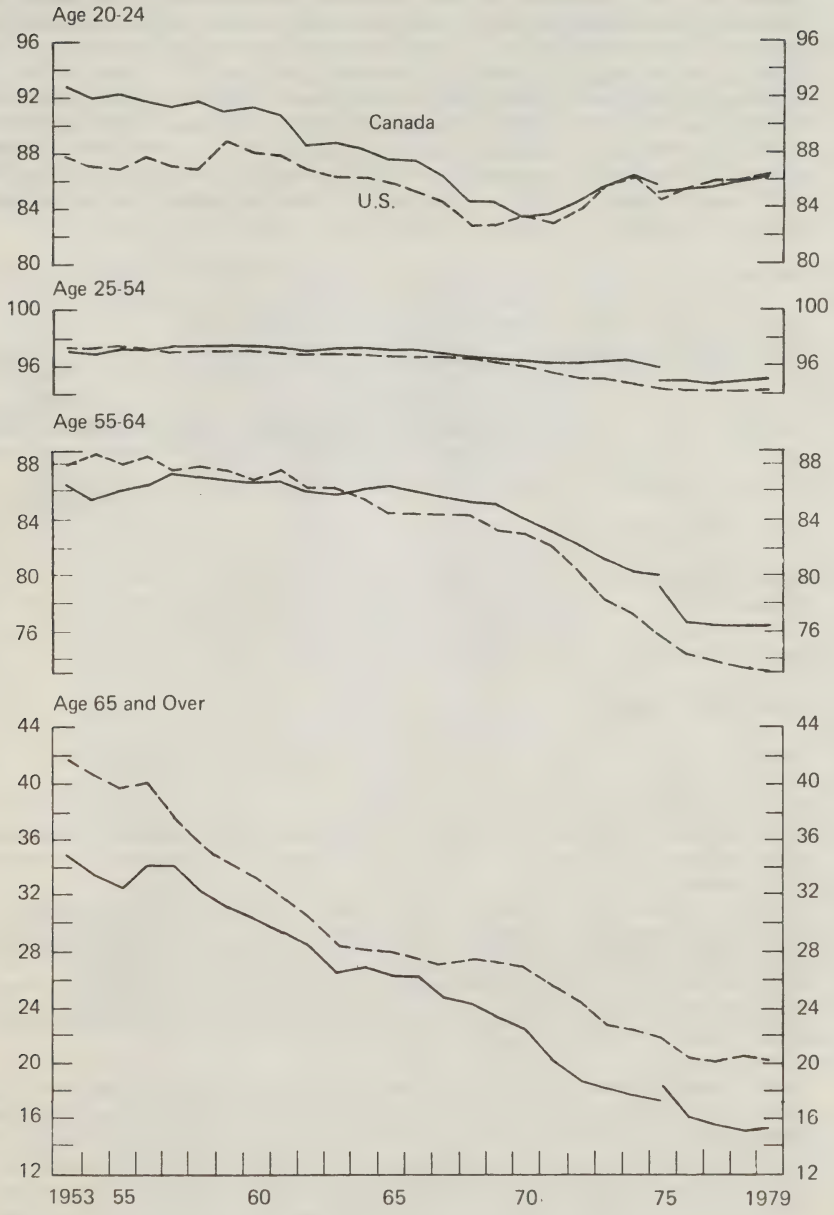
It seems likely that the slow decline in the participation rates of men aged 25-54 in both Canada and the U.S. has represented the net outcome of the interplay of a number of opposing forces. One important factor working to increase the participation rate of men in this age group has probably been the rising average level of educational attainment. In their comprehensive study of participation rates in the U.S., William Bowen and Aldrich Finegan noted a strong positive relationship between the participation rates and the levels of educational attainment of prime-age men. They suggested that this relationship exists:

> primarily because education increases a person's expected market earnings (defined broadly to include the probability of finding work as well as wages) and also his access to the cleaner, more interesting, more pleasant jobs.(1)

(1) William G. Bowen and T. Aldrich Finegan, The Economics of Labor Force Participation, (Princeton Univ. Press, Princeton, 1969), p. 53.

Chart 6

Participation Rates of Adult Men, by Age Group, Canada and the United States, 1953-1979



(1) The breaks in the series for Canada reflect the 1975 revisions to the labour force survey.

Source: Canadian data, Statistics Canada, *The Labour Force*, Cat. 71-001. U.S. data, Bureau of Labor Statistics, *Handbook of Labor Statistics*, and *Employment and Earnings*.

Given this relationship between labour force participation and years of schooling, an increase in the average level of educational attainment should tend to promote an increase in participation rates.

The effect of increases in the level of educational attainment on the participation rates of men aged 25-54 in Canada is illustrated by the data provided in Table 6. Table 6 gives participation rates of men aged 25-54 during the census reference weeks of 1971 and 1976, classified by educational level attained, as well as the population shares accounted for by the various education-level groups. Between 1971 and 1976, the participation rate of most groups declined by at least two percentage points. However, the participation rate of all men aged 25-54 fell by only one percentage point, because of the increases in the population shares accounted for by the higher-education-level groups.

Table 6

Participation Rates of Men Aged 25-54 by Level of Educational Attainment, Canada, 1971 and 1976

	1971		1976	
	Participation Rate	Population Share	Participation Rate	Population Share
Less than grade 9	86.4	34.4	84.8	24.5
High school,(1) grade 9-13	94.7	50.0	92.7	52.3
Some university	95.5	6.4	93.1	10.7
University degree	96.1	9.2	94.0	12.5
Total	92.0	100.0	91.0	100.0

(1) Persons with post-secondary non-university education are included in this category in the 1976 data for purposes of comparability with the 1971 data.
Source: Statistics Canada, 1971 Census of Canada, Labour Force Activity - Work Experience: Labour Force Characteristics by Selected Educational Characteristics and Sex, Cat. 94-772, Volume 3, Part 7 (Bulletin 3.7.2); and 1976 Census of Canada, Labour Force Activity: Labour Force Activity by Age, Sex and Educational Characteristics, Cat. 94-806 (Bulletin 5.7).

Data comparable to those of Table 6 are not available for the 1950s and 1960s. However, even in the absence of such data for earlier years, it seems safe to assert that the increases in average educational attainment over this period (and the shifts in socioeconomic characteristics which rising average educational attainment reflects) probably exerted upward pressure on the participation rate of men aged 25-54. Given the observed profile of the participation rate of this group since the early 1950s, however, it is evident that other factors worked to offset and, in some years, more than offset this upward pressure.

In the U.S., the participation rate of men aged 25-54 has declined steadily since the mid-1960s. A variety of factors have been suggested as possible contributors to this decline. The most important of these appears to have been the liberalization of the eligibility requirements for disability benefits under the Social Security Act. Amendments to the Act in 1956 and 1960 made individuals less than 50 years old eligible to receive disability benefits, while a 1965 amendment liberalized the definition of disability for which benefits could be claimed.(1) Joseph Gastwirth estimated that about half of the decline during the 1960s in the participation rate of men aged 25-54 could have resulted from the changes made to disability regulations.(2) Other researchers have estimated the impact of the changes to have been smaller, although still significant.(3)

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(1) Joseph L. Gastwirth, "On the Decline of Male Labor Force Participation", Monthly Labor Review, Vol. 95, No. 10 (October 1972), pp. 44-46, p. 44.

(2) ibid., p. 45. The finding that increased eligibility for disability benefits has contributed to the decline in the participation rate of men aged 25-54 is consistent with the argument put forward by Bowen and Finegan, op. cit., pp. 68-69. Using 1960 census data, they demonstrated that in general the participation rate of this age group of men was negatively related to even small amounts of non-wage income. They argued that:

> It hardly seems likely that men between 25 and 54 years of age who were able to earn a good income by participating in the labor market would choose not to participate because they received somewhere between $1,000 and $3,000 per annum from other sources - it takes more money than this to qualify as a member of the idle rich. It seems more likely that most of the men receiving $1,000-3,000 of other income and not participating in the labor force are men who would have had difficulty finding employment, and that if they had found jobs they would not have commanded large salaries. In short, our hunch is that the possession of small amounts of other income serves mainly to permit some prime-age males who would otherwise have had a tenuous place in the labor market to stay out altogether.
>
> It is but a short step from this interpretation to another (complementary) explanation for at least a part of the negative association between other income and labor force participation. Some men no doubt received other income precisely because they were out of the labor force. Public assistance and social security payments, periodic receipts from insurance companies, and periodic contributions for support from persons who are not members of the household are all forms of other income, and payments of this sort are of course frequently related to inability to work.

(3) Frederic B. Siskind, "Labor Force Participation of Men, 25-54, by Race", Monthly Labor Review, Vol. 98, No. 7 (July 1975), pp. 40-42, p. 42. See also William V. Deutermann, Jr., "Another Look at Working-Age Men Who Are Not in the Labor Force", Monthly Labor Review, Vol. 100, No. 6 (June 1976), pp. 9-14, p. 10.

The rapid increase in labour force participation of wives has also been cited as a potential explanation for part of the decline in prime-age male participation; however, it is difficult if not impossible to establish this relationship empirically.(1) Gastwirth also suggested that the growth in graduate school enrolment could have had a significant downward impact on prime-age male labour force participation.(2)

As was noted earlier, the decline in Canada in the participation rate of men aged 25-54 occurred over the period 1966-1972. It seems reasonable to focus on this period to attempt to identify some of the factors which may have worked to reduce the participation rate of this group, although, as was suggested above, factors tending to lower the participation rate of men aged 25-54 have presumably operated through much of the period since the 1950s.

As Table 7 shows, the participation rate of each of the 10-year age groups comprising the 25-54 group declined over the period 1966-1972, although the degree and the timing of the decline varied from age group to age group. Because these estimates are subject to sampling error, a lot of significance should not be attached to the precise magnitude of some of the year-to-year changes shown in Table 7. In particular, the year-to-year variations in the participation rates of men aged 25-34 and 35-44 are each within the normal sampling error limits, and may not be very meaningful except insofar as they define a trend over time. It would therefore not be valid to attempt to link many of these changes to events which occurred in particular years. On the other hand, the decline in the participation rate of men aged 45-54 was concentrated in two relatively large declines which were recorded in 1968 and 1972. There may be more point to examining institutional changes and other factors specific to these years for possible impacts on the participation rate of this group.

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(1) Deutermann, op. cit., wrote that:

> the increased labor force participation of wives, coupled with a clear trend toward smaller families, has obviously relieved some American husbands of at least part of their breadwinning burden, allowing them more freedom in the choice of jobs and in the work-leisure decisions (p. 13).

In support of this argument, he noted that 47.5 per cent of men aged 25-54 and not in the labour force in the third quarter of 1976 had working wives. However, this proves nothing. The 1976 participation rate of all married women aged 20-54 was 52.4 per cent, as Deutermann himself noted. It thus appears as though the proportion of prime-age men who were in the labour force and who had working wives was as large as that of men of the same age, not in the labour force, whose wives were working.

(2) Gastwirth, op. cit., p. 44.

Table 7

Participation Rates of Men Aged 25-34, 35-44 and 45-54, Canada, 1965-1972

	25-34	35-44	45-54	Total 25-54
1965	97.5	97.7	95.8	97.1
1966	97.4	97.8	96.0	97.1
1967	97.0	97.6	96.0	96.9
1968	96.7	97.4	95.2	96.5
1969	96.4	97.4	95.3	96.4
1970	96.3	97.2	95.2	96.3
1971	96.4	97.1	95.2	96.2
1972	96.4	97.2	94.4	96.0

Source: Statistics Canada, The Labour Force, Cat. 71-001.

The 1.1-percentage-point reduction in the participation rate of men aged 25-54 corresponds to a withdrawal of only about 35 thousand individuals from the labour force between 1966 and 1972. This is a small number. Nevertheless, it is important to attempt to identify the factors underlying this decline in order to try to determine whether similar declines should be expected in the future. A number of factors which could potentially have contributed to the participation rate patterns shown in Table 7 can be proposed, and the analysis which follows examines these factors. Unfortunately, only a part of the decline in the prime-age male participation rate can be linked to identifiable factors.

There was, first, a very significant expansion in university and other post-secondary educational facilities and enrolments in the 1960s and early 1970s. This could have contributed to the decline in the participation rate of men aged 25-34 in particular. In 1971, the (census) participation rate of men aged 25-34 who were attending school full-time was 74.6 per cent, compared to the 93.4 per cent (census) participation rate of men in the same age group who were not attending school full-time.(1) However, it seems unlikely that the growth of full-time school attendance among men aged 25-34 could have had a large negative impact on the participation rate of this group; in 1971, only 4.2 per cent of men in this age group attended school full-time.

A second factor which may have contributed towards reducing prime-age male labour force participation was the introduction in 1966 of the federal government's Occupation Training of Adults program (OTA). Under this program, adults lacking certain basic academic and/or occu-

(1) Statistics Canada, 1971 Census of Canada, Labour Force Activity - Work Experience: Labour Force Characteristics by Selected Educational Characteristics and Sex, Cat. 94-772, Vol. 3, Part 7 (Bulletin 3.7-2).

pational skills can receive both training and financial support for themselves and their families in the form of subsistence allowances. While enrolled in this program, trainees are not considered as being in the labour force. The number of men aged 25-54 enrolled in this program was only 1,249 in 1967, 2,223 in 1968. In 1969, however, the number of trainees in this age group jumped to 33,419. Over the four years 1969-1972, it averaged 37,548, or 1 per cent of the total male population aged 25-54.(1)

The impact of the OTA program on labour force participation would depend on the extent to which trainees were attracted from the ranks of persons participating in the labour force, as opposed to those not in the labour force. An early examination of this issue suggested that enough OTA trainees were previously in the labour force that the program had a large downward impact on the unemployment rate (and the participation rate) in 1969.(2) However, the measured participation rate of men aged 25-54 fell by only 0.1 per cent in 1969, the year of the major increase in OTA enrolment. This would suggest by itself that the impact of the program on the participation rate of this group was limited. A reasonable middle position, keeping in mind the uncertain nature (in a statistical sense) of some of the participation rate changes, might be that the OTA program accounted for a small, but not negligible, share of the decrease in the 25-54 male participation rate during the latter part of the 1960s.

Third, the sharp drops in 1968 and 1972 in the measured participation rates of men aged 45-54 suggest that particular events, such as institutional changes which occurred in those years, should be examined for possible relevance. With respect to 1972, this was the first full year in which the disability pension provisions of the Canada/Quebec Pension Plan were in effect. The number of men aged 25-54 drawing CPP/QPP disability pensions rose from 1,185 in June 1971 to 3,560 in June 1972, an increase of 2,375. This is a small number. In addition, the impact of the CPP/QPP disability pensions on the participation rate of the 25-54 male group would have been even smaller than this number suggests, since not all persons drawing these pensions would have been in the labour force before receiving their pensions, and out of the labour force after their pensions started.(3)

Disability pensions are also provided to victims of industrial accidents under the Workmen's Compensation programs administered by the provinces. An attempt has been made to determine whether changes in Workmen's Compensation disability pension provisions could have affected the

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(1) These estimates were obtained from the Canada Employment and Immigration Commission.

(2) Dennis Maki, "The Direct Effect of the Occupational Training of Adults Program on Canadian Unemployment Rates", The Canadian Journal of Economics, Vol. V, No. 1 (February 1972), pp. 125-131, p. 127.

(3) The number of men aged 25-54 drawing CPP/QPP disability pensions increased by nearly 2,000 per year on average between June 1972 and June 1977. The (presumably small) effect of the introduction of CPP/QPP disability pensions on the participation rate of this group has thus been a continuing one; it will undoubtedly continue in the future.

labour force participation of men aged 25-54, particularly in the 1966-1972 period. However, definite conclusions in this regard cannot be drawn, for two reasons. First, data on Workmen's Compensation benefits are neither compiled nor published on a national basis. It is difficult to generalize on the basis of benefit-level data obtained on a province-by-province basis. Second, disability pensions are rated on a scale from zero to 100 per cent; many persons, presumably particularly those drawing less than 100-per-cent pensions, continue to work while drawing their pensions. While it remains possible that changes in the benefit structure of Workmen's Compensation payments may have led to some withdrawal of men aged 25-54 from the labour force, this is impossible to establish at this time.

1972 was also the year in which the Unemployment Insurance Act of 1971 became fully effective. One of the changes made to Canada's unemployment insurance system as part of the 1971 revisions was the introduction of sickness benefits for persons defined as having major labour force attachment status, whose employment earnings were disrupted because of illness, injury or quarantine (excluding illness or injury covered by Workmen's Compensation). To the extent that this change permitted some people to withdraw from the labour force for short periods, when formerly they would have had to continue working while ill, some downward pressure on participation rates could have resulted. The equivalent of about 7,700 man-years of sickness benefits were paid to men aged 25-54 whose sickness benefit claims were terminated in 1972.(1) However, the great majority of the individuals claiming these benefits would presumably not have had to quit their jobs as a result of their illnesses. Under labour force survey definitions, such persons would have been counted as employed while they were drawing sickness benefits. Consequently, it seems unlikely that the introduction of the sickness benefit program would have had a major impact on the participation rates of the 25-54 male age group.

The various factors reviewed above may each have contributed to a small extent to the net decline in the participation rate of men aged 25-54 recorded in the period 1966-1972. Some of them may also have put some downward pressure on the participation rate of this group in other years as well. However, it seems likely that other factors, which have not been identified, have also worked to reduce the labour force participation of men aged 25-54.

2.2.2 Participation Rates of Men Aged 55 and Over

In the case of men aged 55-64 and 65 and over, participation rates have declined significantly and very steadily over much of the past 26-year period, as the commonly accepted retirement age has fallen and as a trend towards early retirement has emerged and been maintained. Retirement at lower ages than in the past has depended upon a number of factors which have increased the ability of older persons to retire. In addition, it seems clear that most people whose financial circumstances permit, choose to retire rather than to continue working, even if the choice of continuing to work is open to them.

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(1) This estimate has been calculated from unpublished data provided by the Labour Division, Statistics Canada.

The ability of older persons to retire has been improved by the large and sustained increases in real incomes over most of the postwar period. Growing real incomes have permitted people to earmark significant amounts of savings from disposable incomes for retirement. The expansion of private pension plans, in terms of generosity of the benefit structure and the proportion of the population covered by such plans, has also facilitated the retirement by age 65 for a large and growing share of the male labour force.(1) Changes in the public pension structure have worked in the same direction. The age at which the universal Old Age Security pension became available was lowered from 70 to 65, one year per year, between 1966 and 1971. The Canada/Quebec Pension Plans, introduced in 1966, made available a very important new source of retirement income in Canada; the CPP/QPP benefit system was enriched over the 10 years after 1966, reaching maturity in 1976. The growth in labour force participation of wives may also have been an important factor facilitating the retirement of men at age 65. On the other hand, the real value of some forms of retirement savings has been eroded by the sharp increases in inflation rates in the early 1970s and by the continued high rates of inflation experienced since then.

On balance, there seems to be little doubt that an increased ability to finance retirement at lower ages has been matched by the desire of most employees in Canada to retire at the earliest feasible age. The Senate Committee on Retirement Age Policies has received many briefs from companies which indicate that few workers request to stay on past the mandatory retirement age, while the overwhelming majority prefer to retire before or at that age.(2) Many of the results of studies of attitudes towards retirement and of the ages at which people retire in North America and Western Europe point in the same direction.(3)

(1) Between 1960 and 1976, the number of private pension plans in Canada increased from fewer than 10,000 to almost 16,000; the number of persons covered by such plans increased from fewer than two million to almost four million. Eighty per cent of these pension plans provide full retirement benefits at age 65. See The Economic Council of Canada, One in Three, (Ottawa, 1979), pp. 10-15.

(2) See, for example, the briefs submitted to the Committee by Canadian National Railways, the Canadian Association of University Teachers, the Royal Bank and Rockwell Canada Ltd.

(3) For example, the Ontario Long Term Study on Aging indicated that the majority of persons in its longitudinal sample were either looking forward to or accepting the idea of retirement, while about 21 per cent were not looking forward to retirement (L. Crawford and Jean Matton, "Some Attitudes Towards Retirement Among Middle Aged Employees", Industrial Relations, Vol. 27, No. 4 (1972)). A Saskatchewan survey showed that most persons working beyond the age of 60 did so because of financial necessity (See Milton S. Orris, Factors which Contribute to the Social and Economic Independence of People Over 60, Social Planning Council of Saskatoon (Saskatoon, 1970)). Surveys conducted by the U.S. Social Security Administration have shown dramatic increases in the postwar period in the numbers of persons of good health who retired voluntarily for non-health reasons. Alicia H. Munnell, The Future of Social Security, (The Brookings Institution, Washington, D.C., 1977), pp. 68-69. See also evidence reported in the Commission of the European Communities, The Attitude of the Working Population to Retirement, (1978).

The existence of mandatory retirement ages for many jobs has also been an important factor underlying the decline in participation rates of men aged 65 and over in the postwar period. The proportion of the work force covered by mandatory retirement age provisions has increased over this period; by 1975, just under half of all jobs in Canada were subject to such provisions. Such provisions tend to reflect changing specifications of the age for entitlement to social security benefits.(1) As was noted above, the age of entitlement to the Old Age Security pension in Canada was reduced from 70 in 1966 to 65 in 1971. While mandatory retirement means leaving a particular job and not necessarily withdrawal from the labour force, the two are probably synonymous for the great majority of older workers.

Broadly speaking, many of the factors which explain the steady decline in the participation rate of men aged 65 and over also account for the trend towards early retirement which emerged in the 1960s and continued through the 1970s, and which in turn underlies the decline in labour force participation of men aged 55-64. The growth of pension plans with relaxed criteria for retirement with full pension has in particular probably contributed significantly to the growth in early retirement.

One additional factor which plays an important role in the individual's decision as to whether or not to take an early retirement is the state of his health. A U.S. survey showed that over 50 per cent of new social security beneficiaries who took early retirement cited poor health as the main reason for doing so, while less than 25 per cent of persons retiring at the standard age 65 cited poor health as the main factor in their retirement decision.(2) Canadian data indicate that similar patterns prevail here. According to the 1975 retirement survey, nearly 40 per cent of persons retiring before age 65 cited poor health as the main reason why they retired; as in the U.S. fewer than 25 per cent of persons retiring at or after age 65 reported that they retired because their health was poor.(3) In this regard, the disability pension provisions of the CPP/QPP may have played a role in promoting some withdrawal of men aged 55-64 from the labour force; by June 1977, nearly 35,000 men in this age group were drawing CPP/QPP disability pensions.

2.2.3 Participation Rates of Men Aged 20-24

At the other end of the age spectrum, a major choice facing most men aged 20-24 is whether to work or to continue their education. For this reason, the participation rate of men in this age group is closely, and inversely, related to their school enrolment rate. Table 8 provides data on enrolment of men aged 18-24 in post-secondary institutions in Canada, from the school year 1962-1963 to 1976-1977. Although the age group range of these data does not exactly match that of the participation rate estimates, there is still a very close relationship between

(1) Munnell, op. cit., p.63.
(2) Virginia Reno, "Why Men Stop Working At or Before Age 65: Findings from the Survey of New Beneficiaries", Social Security Bulletin, Vol. 34, No. 6 (June 1971), p. 5.
(3) Economic Council of Canada, "One in Three," op. cit., p. 68.

the two sets of rates. Enrolment rates rose very sharply during the 1960s, while the participation rates of men aged 20-24 continued to fall, at a sharper rate than in the 1950s (see Chart 6). Enrolment rates peaked in the early 1970s, and declined moderately thereafter; this pattern was matched by moderate increases in the participation rate of males aged 20-24.(1)

Table 8

Enrolment of Males in Post-Secondary Institutions, Full-Time and Part-Time, as a Percentage of the Male Population Aged 18-24, Canada, 1962-1963 to 1976-1977(1)

	Full-Time	Part-Time	Total
1962-1963	13.6	3.1	16.7
1963-1964	14.5	3.9	18.4
1964-1965	15.3	4.1	19.4
1965-1966	16.5	4.4	20.9
1966-1967	17.5	4.7	22.2
1967-1968	19.0	5.1	24.1
1968-1969	20.0	5.1	25.1
1969-1970	21.0	5.8	26.8
1970-1971	21.9	7.4	29.3
1971-1972	22.3	6.4	28.7
1972-1973	21.8	5.6	27.4
1973-1974	22.0	5.7	27.7
1974-1975	21.4	5.6	27.0
1975-1976	21.6	5.9	27.5
1976-1977	21.7	5.9	27.6

Source: Statistics Canada, Education in Canada, Cat. 81-229.
(1) For the period 1971-1972 to 1978-1979, age-specific enrolment rates are available. For males aged 20-24, full-time enrolment in all levels of education declined from 17.5 in 1971-1972 to 14.6 in 1978-1979. The source of these data is Z. Zsigmond, G. Picot, W. Clark and M.S. Devereaux, Out of School - Into the Labour Force, Statistics Canada, Cat. 81-570E, (1978).

The patterns in the enrolment rates of young men in the 1950s and 1960s were closely related to measures of the returns to higher education both in Canada and the U.S. This suggests that labour market conditions may be important determinants of the enrolment-participation decision for this age group.

(1) Chart 6 shows that pattern of movement of the participation rate of men aged 20-24 in the U.S. was very similar to that in Canada. The enrolment rate patterns were also very similar in the two countries. The proportion of men aged 20-24 enrolled in school full-time or part-time rose from 18.5 per cent in 1953 to a peak of 32.0 per cent in 1969, then declined to 25.2 per cent in 1973. The 1976 enrolment rate was 26.0 per cent. See U.S. Bureau of Labor Statistics, Handbook of Labor Statistics.

For the U.S., Richard Freeman has calculated that the ratio of starting salaries for college-trained persons relative to the average annual earnings of full-time workers rose during the 1950s and 1960s, when the enrolment rate for this group was rising, and fell during the 1970s, when enrolment was declining.(1) Freeman also reports another set of statistics which support the finding that the returns to a college education fell during the 1970s. The average income of male four-year college graduates aged 25-34 fell in real terms by 15.7 per cent between 1969 and 1974-1975, while the average income of male high school graduates aged 25-34 increased by 0.8 per cent in that period. While there was still a considerable premium to a college education in 1974-1975, that premium had diminished significantly during the period from 1969.(2)

In Canada similar patterns have emerged between the ratio of starting salaries for graduates with bachelor degrees relative to the average industrial wage and enrolment. Zoltan Zsigmond and his colleagues have reported that:

> As the number of job-seekers with bachelor's degrees increases, their labour market position appears to deteriorate. A comparison of starting salaries in industry for graduates with bachelor's degrees, with average earnings of all industrial workers, shows that in 1965 a graduate's average starting salary was 110% of that for all workers; this peaked in 1968 at 118%. A subsequent turn-around meant that by 1977 new bachelor's graduates earned 88% of the average industrial wage.(3)

An important factor underlying the observed trends in enrolment and labour force participation thus appears to have been the trend in the returns to higher education.(4) It may be, therefore, that the evolution of enrolment and participation rates during the 1980s and 1990s will be influenced considerably by future developments in this area. Freeman suggests that, in the U.S., the returns to higher education will rebound somewhat in the 1980s and lead to higher enrolment rates, although these rates will remain below the levels attained in the late 1960s.(5) Zsigmond and his colleagues on the contrary suggest that in Canada increases in future enrolment rates are highly unlikely.(6) Both Freeman and Zsigmond and his colleagues stress that the results of their respective projections should be interpreted as being highly tentative in nature. These results suggest that there is considerable

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(1) Richard B. Freeman, The Over-Educated American, (Academic Press, New York, 1976), pp. 71-72.
(2) Richard B. Freeman "The Decline in the Economic Rewards to College Education", The Review of Economics and Statistics, Vol LIX, No. 1 (February 1977), pp. 18-29.
(3) Z. Zsigmond, et al., op. cit., p. 58.
(4) It is important to note that female enrolment did not show a decline in the 1970s similar to that for males. One reason for this may be that, for women, the returns to a college education flattened out or deteriorated only to a small extent during the 1970s. On this point, see Freeman "The Decline in the Economic Rewards...", op. cit., pp. 21-22.
(5) Freeman, "The Over-Educated American", op. cit., pp. 74-75.
(6) Zsigmond et al., op. cit., pp. 207-208.

scope for reasonable disagreement over the future course of enrolment rates and hence of labour force participation rates of men aged 20-24.

2.2.4 Adult Male Labour Force Participation in the Future

Trends in participation rates of men aged 25-54 will dominate trends in the adult male group, as in the past. Some of the factors which contributed to the decline of the participation rate of this group in the late 1960s and early 1970s have been identified; however, these factors explain only part of that decline. In view of the uncertainty remaining in this area, and the relatively steady decline which has occurred in the participation rate of men aged 25-54 in the U.S., it seems most reasonable to project a marginal decline in the participation rate of this group of men over the medium and longer term.

Among older men, a continued decline in labour force participation would not be unreasonable in light of the evidence presented. The extent and speed of the decline for men aged 55-64 may be increased, however, if proposals to enrich the CPP/QPP system, and to allow early retirement with actuarially reduced benefits, are implemented.(1) This would be in line with the experience of other countries which have legislated similar possibilities, with regard to early retirement in particular, into their social security systems. For the group aged 65 and over, the proposal to ban mandatory retirement provisions may, if implemented, reduce the rate of decline of the participation rate.(2) In any case, the low levels of labour force participation attained by this group in recent years would by itself indicate that some slackening of the rate of decline should occur.

For men aged 20-24, the outlook is highly uncertain, as even the direction of change of participation rates is problematical. The choice that seems the least contentious for this group is to project a continuation of the recent upward trend in labour force participation, though at declining rates over the projection period.

The net result of these specific age-group projections is that the aggregate adult male participation rate is projected to decline slowly over the medium and longer term, at a rate similar to that which has been observed in the past.

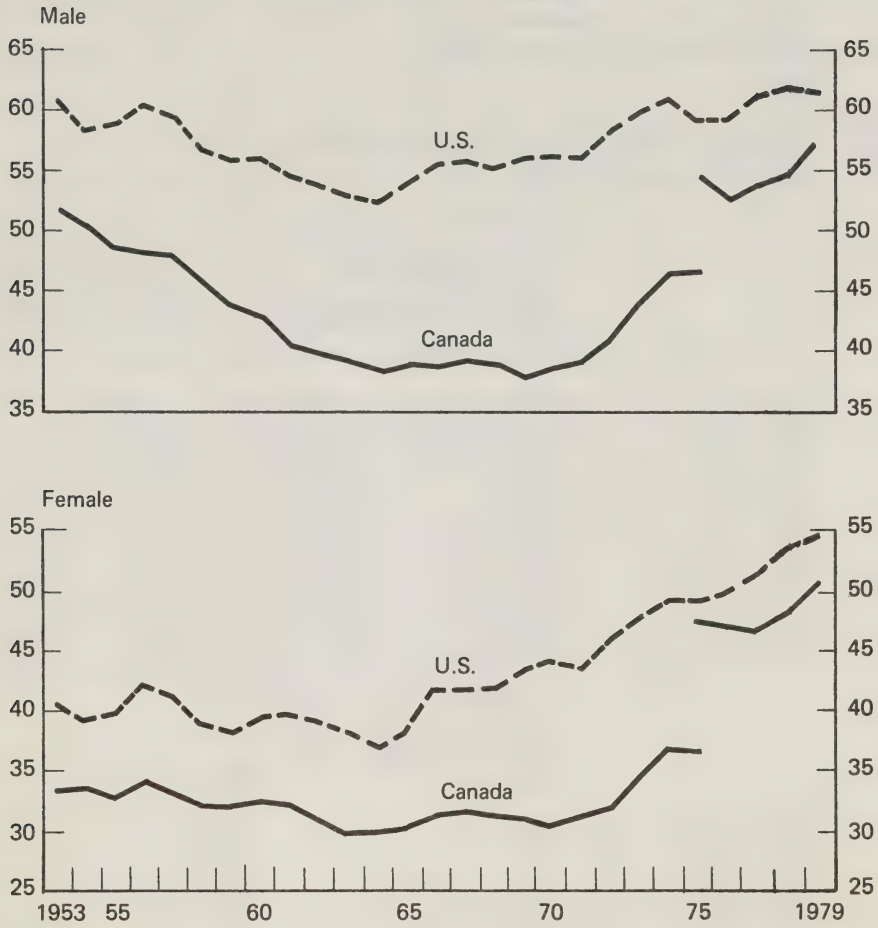
2.3 Participation Rates of Young Persons, Past and Projected

Chart 7 provides the participation rates of persons aged less than 20 years, in Canada and the U.S., over the period 1953-1979. This age group consists of persons aged 16-19 in the U.S.; in Canada, it included persons aged 14-19 from 1953 to 1975, and persons aged 15-19 following the labour force survey revisions in 1975. The difference in age ranges in the Canadian and U.S. data means that only the trends in the rates in the two countries, not the levels of the rates, can be compared.

(1,2) See the proposals of the Report of the Special Senate Committee on Retirement Age Policies, Retirement Without Tears, (Ottawa, 1980), pp. 11-14.

Chart 7

Participation Rates of Persons Aged Less Than 20 Years, Canada and the United States, 1953-1979



(1) This age group consists of persons aged 16-19 in the U.S. In Canada, it included, from 1953 to 1975, persons aged 14-19. Since the 1975 LFS revision, it includes persons aged 15-19.

Source: Canadian data, Statistics Canada, *The Labour Force,* Cat. 71-001. U.S. data, Bureau of Labor Statistics, *Handbook of Labor Statistics,* and *Employment and Earnings.*

The participation rate of young men in Canada declined sharply through the 1950s and 1960s, before rebounding in the 1970s to levels recorded in the 1950s. A more modest decline occurred in the 1950s in the case of the participation rate of young women; this rate stabilized during the 1960s, then increased sharply during the 1970s. The participation rates of the corresponding groups in the U.S. behaved in a very similar fashion over the 26-year period.

Table 9

School Enrolment Rates of Young Persons in Canada, 1960-1961 to 1978-1979

	Enrolment in Secondary School as Percentages of the Population Aged 14-17		Enrolment in Post-Secondary Institutions As Percentages of the Population Aged 18-21	
	Male	Female	Male	Female
1960-1961	66.1	66.8	N/A(1)	N/A
1961-1962	71.9	72.1	N/A	N/A
1962-1963	76.0	76.3	25.2	17.3
1963-1964	78.9	78.6	27.6	18.7
1964-1965	81.9	79.7	28.8	19.7
1965-1966	85.2	82.4	30.9	20.9
1966-1967	88.7	86.9	32.3	21.8
1967-1968	87.2	85.0	35.4	24.2
1968-1969	92.1	89.6	37.4	25.9
1969-1970	94.6	93.9	40.1	28.2
1970-1971	98.5	97.1	44.4	31.7

	Enrolment at all Educational Levels, as Percentages of the Population Aged 15-19	
	Male	Female
1971-1972	68.9	64.8
1972-1973	67.7	64.8
1973-1974	65.6	63.5
1974-1975	64.6	63.0
1975-1976	65.0	63.6
1976-1977	64.5	63.6
1977-1978	62.7	62.5
1978-1979	61.7	61.8

(1) Not available.
Source: For the period 1960-1961 to 1970-1971, data are taken from Statistics Canada, Education in Canada, Cat. 81-229. For the period 1971-1972 to 1978-1979, data are drawn from Z. Zsigmond et al., op. cit.

As Table 9 shows, the patterns of change in the participation rates of young persons have been in part related to changes in school enrolment. The decline in the teenage male participation rate during the 1960s was accompanied by a rapid increase in enrolment rates of young men.

Secondary school enrolment, as a proportion of the population aged 14-17, increased by over 30 percentage points. Full-time and part-time enrolment in post-secondary institutions, as a share of the population aged 18-21, rose by almost 20 percentage points between 1962-1963 and 1970-1971.

Enrolment data for the 15-19 year age group are available beginning in 1971-1972; these data are provided in the bottom panel of Table 9. Relatively steady declines in the enrolment rates of this group have been recorded as participation rates have increased during these years. A relatively small share (roughly 20 per cent) of the decline in these enrolment rates is attributable to the fact that the age distribution within the 15-19 year old group has shifted towards the upper end of the age range, and enrolment rates fall sharply with increasing age within the 15-19 group. Most of the decline in enrolment rates, however, has resulted from declines in enrolment rates for each "single year of age" within the overall age group, except in the case of women aged 19 years. For each single year of age, declines in male enrolment rates have been larger than declines in female enrolment rates.

The declines in enrolment rates and increases in labour force participation rates recorded by young persons aged 15-19 in the 1970s may have reflected to some extent the decline in the relative value of higher education reviewed earlier. As was noted in the discussion of the labour force participation of young men aged 20-24, there is a considerable range of possibilities for the evolution of the returns to higher education in the future. For this reason any projections of school enrolment and the implication of enrolment rates for the labour force participation rates of persons aged 15-19 must be considered as being highly tentative, indeed speculative, in nature. The present projection assumes that the participation rate of this group will increase at a moderate pace over the projection period.

3. A PROJECTION OF LABOUR FORCE GROWTH

In this chapter, projections for the working-age population, participation rates and the labour force in Canada to the year 2000 are developed. Section 3.1 discusses the determinants of working-age population growth in Canada, and how these are expected to influence working-age population growth over the next 20 years. Section 3.2 provides projected labour force participation rates for adult women, adult men, and young persons; these projections are based on the considerations reviewed in the last chapter. Section 3.2 concludes with a projection of labour force growth to the end of the century.

3.1 Working-Age Population Growth to 2000

The Canadian working-age (or labour force source) population, as defined in the labour force survey, includes the great majority of civilians aged 15 and over. Working-age population growth results from natural increase in the population and from net immigration of persons aged 15 and over.

The persons who will represent the natural increase in the working-age population over the next 15 years are the persons who have been born over the past 15 years, and who live to age 15. Since births over the past 15 years are known and mortality rates can be projected quite accurately, the natural-increase component of working-age population growth to the year 1995 can be calculated with a high degree of precision.

There is somewhat more uncertainty with respect to the natural-increase component of working-age population growth after 1995, because this depends upon the projection of future births. Since the projection developed here covers the period to only the year 2000, however, it is only the children who are born in the next five or six years who will reach working age in that part of the projection period after 1995. Given the fertility patterns which have developed in previous years, and which were discussed above, it appears likely that births can be projected with a reasonable degree of accuracy, at least for the next five years or so.

Although the fertility rate is now at a level below that required for the population to reproduce itself, there is little sign of pressures emerging which would tend to move the rate upwards. On the contrary, factors which are associated with fertility are operating in directions which tend to put downward pressure on the fertility rate. For example, the proportion of Canadian women who are not married is rising. In 1975, for example, 23.8 per cent of women aged 20-44 were not married; by 1979, this proportion had risen to 26.1 per cent.(1) In part this

(1) Calculated from Statistics Canada, The Labour Force, Cat. 71-001.

reflects the rising incidence of marriage breakdown, which was discussed earlier. In addition, the number of marriages has in fact declined in recent years, despite the fact that the age structure of the population is conducive to growth in the number of marriages.(1) This has been associated with an increase in the average age at which women are marrying, which in turn tends to be associated with a falling fertility rate.

In view of both the relative stability at low levels of the Canadian fertility rate in the past few years, and the absence of identifiable pressures which could be expected to lead to higher fertility rates, it appears most reasonable to project fertility rates to remain low at least over the short term. It appears as though fertility rates can be expected to remain low over the longer term as well. Support for this view is provided by the results of surveys on birth expectations in the U.S. (No comparable nation-wide data are available for Canada). The data provided in Table 10 indicate that, among younger married women, expectations with respect to numbers of births are stabilizing near, on average, two children per woman. For all women (single as well as married) the number of births per woman could therefore be expected to be on average somewhat lower than two. Thus it does not appear unreasonable to expect fertility rates to remain below 2.0 in the U.S. and in all likelihood in Canada as well, over the longer term.

Table 10

Expected Number of Births, Currently Married Women, by Age, U.S., 1967-1977

	Age Group					
	18-19	20-21	22-24	25-29	30-34	35-39
1967	2.7	2.9	2.9	3.0	3.3	3.3
1971	2.3	2.4	2.4	2.6	3.0	3.3
1974	2.2	2.1	2.2	2.3	2.7	3.1
1977	2.2	2.1	2.1	2.2	2.5	2.9

Source: U.S. Bureau of the Census, Current Population Reports, Series P-20, various issues.

In this projection, then, the Canadian fertility rate is assumed to fall marginally from its present level to reach 1.7 in 1990, and remain constant at that level thereafter. Under this assumption, the rate of natural increase of the Canadian population will be low over the next 20 years. A slow rate of natural increase over the next five years or so will mean slow natural increase in the working-age population in the period 1996-2000.

(1) Statistics Canada, Vital Statistics, Cat. 84-001, Vol. 26, No. 4 (December 1978).

The growth of Canada's labour force source population is also determined by the levels of net immigration (net immigration is the difference between gross immigration to, and emigration from Canada). Net immigration flows represent the outcome of the interaction of a number of factors, and are highly variable on a year-to-year basis.

Historically, the numbers of persons immigrating to Canada have fluctuated substantially from year to year. In part, the volatility of gross immigration has been related to Canada's willingness to accept large numbers of refugees. Thus the immigration to Canada of Hungarian refugees in 1957 and Ugandan and Chilean refugees in the early 1970s helps account for the extraordinarily high levels of immigration recorded in those years. In part, the variability of immigration has also been related to the performance of the Canadian economy. High rates of unemployment tend to discourage potential immigrants, particularly those from other industrialized countries. In addition, an important part of the overall flow of immigrants consists of relatives being sponsored as immigrants by persons who have previously immigrated to Canada. Cycles in immigration levels tend to be echoed in subsequent cycles in levels of sponsored immigration. Finally, changes in the statutes or regulations governing immigration are also an important source of variation in gross immigration levels.

With respect to emigration from Canada, the relative attractiveness of other countries, as compared to Canada, is particularly important. Emigration from Canada tends to be higher during periods when the Canadian economy is performing poorly relative to other industrialized economies, particularly that of the U.S. Emigration has also reflected to some extent the volume of gross immigration to Canada, since a significant proportion of emigration from Canada is return immigration.

Between the early 1970s and the present, gross and net immigration levels have declined very sharply. In 1973, gross immigration of 184,200 was recorded; by 1978, gross immigration had fallen to an estimated 85,600. Part of this decline has probably been related to the slow growth and generally high unemployment rates experienced over this period. Much of it, however, has been attributable to the tightening of immigration regulations in the mid-1970s, the total impact of which has taken some time to be reflected fully in immigration levels.

Under the Immigration Act enacted in 1978, the federal government is required to determine and announce targets for future levels of immigration. The initial statement of government policy in this area indicated that 100,000 immigrants was the target for gross immigration for 1979, and that future levels of gross immigration should not fall below 100,000 annually.(1) At current rates of emigration, gross immigration of 100,000 would likely correspond to net immigration of about 25,000-35,000.

However, it seems reasonable to project somewhat higher average rates of net immigration, for three reasons. First, the flow of refugees from Southeast Asia to Canada is expected to push the net immigration level

(1) Employment and Immigration Canada, Annual Report to Parliament on Immigration Levels, (1978).

to 50,000 or higher in 1980. In the 1980s and 1990s, flows of refugees can be expected to augment Canada's immigration flows from time to time, as they have in the past. Second, the possibility exists that shortages of skilled labour in particular occupations could emerge in Canada in the 1980s, which in turn could require that gross immigration targets in excess of 100,000 per year be set. Finally, the reduction in levels of gross immigration in the second half of the 1970s, and the continuation in the future of gross immigration levels generally lower than those of the past, will likely work to reduce the return-migrant component of emigration in the future.

The considerations discussed above suggest that a population projection characterized by a low fertility rate and net immigration levels somewhat above 30,000 per year would be the most reasonable. Among the population projections recently released by Statistics Canada, the projection which reflects these considerations most closely is the one which assumes net annual immigration of 50,000, and a fertility rate which declines steadily to 1.7 by 1991 and remains constant thereafter. This projection has been adopted here.(1)

Table 11

Average Annual Percentage Increases in the Total Population and the Working-age Population of Canada, Historical, 1956-1979, and Projected, 1980-2000

	Total Population	Working-Age Population
Historical		
1956-1960	2.6	2.2
1961-1965	1.9	2.1
1966-1970	1.6	2.7
1971-1975	1.3	2.5
1976-1979	1.1	2.0
Projected		
1980-1985	1.0	1.3
1986-1990	0.9	1.0
1991-1995	0.7	0.9
1996-2000	0.5	0.8

Source: Statistics Canada, The Labour Force, Cat. 71-001, and Vital Statistics, Cat. 84-201; and Long Range and Structural Analysis Division, Department of Finance.

(1) Minor adjustments to the population levels have been made to take into account recent population estimates. The Statistics Canada projection itself is described in more detail in Statistics Canada, Population Projections for Canada and the Provinces, 1976-2001, Cat. 91-520. Because of the difficulty of predicting year-to-year changes in the factors influencing net immigration, long-term projections often are based on constant average annual net immigration levels. This convention is used in this projection as well.

Table 11 provides projected rates of growth of Canada's total population and working-age population, for five-year intervals to the year 2000, based on the assumptions discussed above regarding the fertility rate and the annual level of net immigration. Table 11 also provides historical data for comparative purposes. The growth of the total population is projected to decelerate steadily over the projection period, but at a relatively moderate rate. The growth rate of the working-age population is projected to decelerate more sharply in the initial years of the projection period, reflecting the decline of fertility rates in the 1960s. The more modest slowdown in source population growth in the latter part of the projection period, on the other hand, reflects the stabilization of the fertility rate in the mid-1970s, and the projection of only marginal declines in the fertility rate from its present level.

3.2 Participation Rate Growth to 2000

The analysis of participation rate movements provided in Chapter 2 was qualitative in nature. It is the basis for the numerical projection of participation rates presented in this section. Given the nature of the underlying analysis, it is clear that quite a wide range of participation rate projections would be consistent with it. In addition, the longer the projection period, the wider the range of possible participation rate movements. Because of the uncertainty inherent in any one projection of participation rates, two such projections are provided in this chapter. The course followed is to make one projection for male participation rates and two projections, one "high" and one "low", for female participation rates. This does not mean that projections of male participation rates are not subject to uncertainty; rather, it means that the major uncertainty resides in the projection of adult female rates.

The general procedure used in developing the projections is as follows. First, a projection of male participation rates consistent with the qualitative analysis in Chapter 2 is made. Because it does not seem likely that the participation rates of women will exceed those of men within the next two decades, the male participation rate projection provides an upper limit to the foreseeable extent of expansion of female participation over this period. Second, an analysis of the differentials between male and female participation rates by age group which have existed historically, and the rate at which these differentials have been narrowed over the historical period, is undertaken. In light of this analysis, two sets of male-female participation rate differentials to obtain in the year 2000 are projected. Finally, using the male participation rate projection, and the two sets of projected differentials, two projections for female participation rates are made.

The analysis of Chapter 2 suggested that the participation rates of adult men in the prime age groups might decline marginally in coming years, while the participation rates of older men might decline to a somewhat greater extent. For younger men the direction of change is more uncertain, although it seems more likely that their participation rates will increase rather than decline. Projections to the year 2000 for male participation rates by age group based on these considerations are provided in Table 12. Historical estimates are also provided for purposes of comparison.

Table 12

Levels and Average Annual Percentage Rates of Change in Male Participation Rates, by Age Group, Canada, Historical, 1953-1979, and Projected, 1980-2000(1)

	Age Group						
	15-19	20-24	25-44	45-54	55-64	65 and over	Total, 20 and over
Participation Rate Levels(2)							
1953	60.7	92.2	96.4	94.6	85.9	37.0	86.4
1960	50.2	90.6	96.6	95.5	86.0	32.2	86.0
1965	45.4	87.0	96.4	94.8	85.8	28.0	84.7
1970	45.3	82.6	95.5	94.2	83.8	24.1	83.2
1975	54.7	84.9	95.6	92.7	79.4	18.5	82.4
1979	57.2	86.4	96.0	92.7	76.5	15.3	81.7
1985	60.0	88.5	95.7	92.0	74.7	13.0	81.5
1990	60.0	90.0	95.4	91.5	73.2	11.7	80.8
1995	60.0	90.0	95.2	91.2	71.4	10.7	80.0
2000	60.0	90.0	95.0	91.0	70.0	10.0	79.2
Average Annual Percentage Rates of Change in Participation Rates							
1954-1960	-2.7	-0.2	-	0.1	-	-2.0	-0.1
1961-1965	-2.0	-0.8	-	-0.1	-	-2.8	-0.3
1966-1970	-	-1.0	-0.2	-0.1	-0.5	-3.0	-0.4
1971-1975	3.8	0.6	-	-0.3	-1.1	-5.2	-0.2
1976-1979	1.1	0.4	0.1	-	-0.9	-4.6	-0.2
1980-1985	0.8	0.4	-0.1	-0.1	-0.4	-2.7	-
1986-1990	-	0.3	-0.1	-0.1	-0.4	-2.1	-0.2
1991-1995	-	-	-	-0.1	-0.5	-1.8	-0.2
1996-2000	-	-	-	-	-0.4	-1.3	-0.2

(1) The projected figures are not intended to be more precise than the general statements in the text.
(2) The historical estimates for years prior to 1975 have been adjusted to correspond to new labour force survey definitions.
Source: Statistics Canada, The Labour Force, Cat. 71-001, and unpublished tabulations from the labour force survey; and Long Range and Structural Analysis Division, Department of Finance.

As is shown in Table 12, the participation rates of men in the age groups 15-19 and 20-24 are projected to continue to rise as they have in the recent past, before stabilizing at rates comparable to those recorded by men in these age groups in the 1950s. For men in the age

groups 25-44 and 45-54, participation rates are projected to continue to decline at rates comparable to those recorded in the past. On the other hand, for men aged 55-64 and 65 and over, the rates of decline in labour force participation are projected to be lower than in the recent past. For men aged 20 and over as a whole, the participation rate is projected to decline from 81.7 per cent in 1979 to 79.2 per cent in 2000, a decline of 2.5 percentage points.

Historically, female participation rates have been well below male participation rates for all age groups. However, the differentials in participation rates between men and women in all age groups have narrowed considerably since 1953, as is shown in Table 13. The data in this table also indicate that for the most part, the differentials have been narrowed to a relatively greater extent for the younger age groups than for the older age groups. Close to two-thirds of the differentials existing in 1953 for the age groups 15-19 and 20-24 had been eliminated by 1979. This compares to the elimination of half of the 1953 differentials in the case of the age groups 25-34 and 35-44, and 40-45 per cent of the corresponding differentials for the 45-54 and 55-64 groups.

Table 13

Differentials Between Male and Female Participation Rates, by Age Group, Canada, Historical, 1953-1979, and Projected, 1980-2000(1)

	Age Group						
	15-19	20-24	25-34	35-44	45-54	55-64	65 and over
Male-Female Participation Rate Differentials(2)							
1953	17.6	43.2	70.8	73.5	72.9	72.2	33.1
1979	6.4	15.1	35.3	36.9	40.6	42.5	11.1
2000 (low projection)	0	8.0	15.0	10.0	10.0	10.0	5.0
2000 (high projection)	0	8.0	12.0	7.0	0	0	0
Extent of Narrowing of Participation Rate Differentials							
	15-19	20-24	25-34	35-44	45-54	55-64	65 and over
1954-1979	11.2	28.1	35.5	36.6	32.3	29.7	22.0
1980-2000 (low projection)	6.4	7.1	20.3	26.9	30.6	32.5	6.1
1980-2000 (high projection)	6.4	7.1	23.3	29.9	40.6	42.5	11.1

(1) The projected figures are not intended to be more precise than the general statements in the text.
(2) The historical estimates for 1953 have been adjusted to correspond to new labour force survey definitions.

Source: Statistics Canada, The Labour Force, Cat. 71-001, and unpublished tabulations from the labour force survey; and Long Range and Structural Analysis Division, Department of Finance.

The age group patterns which are evident in the relative degree of narrowing of male-female participation rate differentials over the period 1954-1979 are likely to be reversed in the future for two reasons. First, the women currently in the younger age groups are responsible for the rapid reduction of the differentials for the younger age groups in the recent past. As these women move into the older age groups over the balance of this century, it seems likely that they will maintain their relatively high levels of participation. This will mean that the narrowing of participation rate differentials for the older age groups will become relatively more pronounced in the 1980s and 1990s, echoing in a sense the reductions in the differentials for younger age groups in previous decades. Second, the participation rate differentials in the younger age groups have already been closed to a substantial degree, and there is less room for further narrowing. It follows, therefore, that the narrowing of the differentials for these younger age groups will be of a smaller order of magnitude than in the past. These considerations, taken together, suggest that the age group pattern of narrowing of participation rate differentials in the future will be the reverse of what it has been in the past.

The considerations discussed above are reflected in the projections of participation rate differentials for the year 2000 provided in Table 13. In each of the high and low projections, the extent to which participation rate differentials are narrowed in absolute terms and, for the most part, in relative terms as well, increases steadily from age group to age group, except in the case of persons aged 65 and over In both projections, positive male-female differentials are projected in the cases of the age groups 20-24 through 35-44; the projected differentials are intended to reflect the childbearing and childrearing responsibilities of women in these age groups. In the low projection, positive participation rate differentials are projected to obtain for age groups 45-54 through 65 and over; in the high projection, these differentials are eliminated.

Table 14 and Table 15 provide projections of female participation rates, based on the projected male-female participation rate differentials, and the projected male participation rates described earlier. Historical data for purposes of comparison are also provided in the tables. The growth in the participation rates of women is the same in both projections for the period 1980-1985. Over this period, participation rate growth is projected to be strongest for the age groups 25-34 through 45-54. The growth in the participation rates of women under 25 is projected to continue to decelerate, as it did during the second half of the 1970s.

During the remainder of the projection period, 1986-2000, the two projections diverge. Considering first the low projection, the growth rates of female participation rates for all except the two oldest age groups are projected to decelerate quite rapidly during the second half of the 1980s and into the 1990s (see Table 14). As well, participation rate growth is generally projected to be stronger for the older age groups than for the younger age groups. By and large, similar patterns obtain in the case of the high projections although growth rates of participation rates are higher for most age groups.

Table 14

Levels and Average Annual Percentage Rates of Growth of Female Participation Rates, by Age Group, Canada, Historical, 1953-1979, and Projected, 1980-2000, the Low Projection(1)

	Age Group							
	15-19	20-24	25-34	35-44	45-54	55-64	65 and over	Total 20 and over
Participation Rate Levels(2)								
1953	43.1	49.0	25.3	23.3	21.7	13.7	3.9	23.2
1960	42.3	50.0	28.9	31.0	32.2	22.6	6.1	28.5
1965	39.2	54.6	33.0	36.0	39.2	28.7	6.5	33.3
1970	39.5	60.8	41.3	42.5	43.0	31.6	5.5	38.4
1975	47.4	66.9	52.9	51.5	46.1	30.8	4.8	43.9
1979	50.8	71.3	60.4	59.4	52.1	34.0	4.2	48.6
1985	56.0	74.7	70.0	71.0	63.5	39.0	4.4	55.6
1990	58.5	77.0	74.5	78.0	71.0	44.0	4.6	59.4
1995	60.0	79.5	77.5	82.0	77.0	52.0	4.8	62.6
2000	60.0	82.0	80.0	85.0	81.0	60.0	5.0	65.3
Average Annual Percentage Rates of Growth of Participation Rates								
1954-1960	-0.3	0.3	1.9	4.2	5.8	7.4	6.6	3.0
1961-1965	-1.5	1.8	2.7	3.0	4.0	4.9	1.3	3.2
1966-1970	0.2	2.2	4.6	3.4	1.9	1.9	-3.3	2.9
1971-1975	3.7	1.9	5.1	3.9	1.4	-0.5	-2.7	2.7
1976-1979	1.7	1.6	3.4	3.6	3.1	2.5	-3.3	2.6
1980-1985	1.6	0.8	2.5	3.0	3.4	2.3	0.8	2.3
1986-1990	0.9	0.6	1.3	1.9	2.3	2.4	0.9	1.3
1991-1995	0.5	0.6	0.8	1.0	1.6	3.4	0.9	1.1
1996-2000	-	0.6	0.6	0.7	1.0	2.9	0.8	0.8

(1) The projected figures are not intended to be more precise than the general statements in the text.
(2) The historical estimates for years prior to 1975 have been adjusted to correpond to new labour force survey definitions.

Source: Statistics Canada, The Labour Force, Cat. 71-001, and unpublished tabulations from the labour force survey; and Long Range and Structural Analysis Division, Department of Finance.

Table 15

Levels and Average Annual Percentage Rates of Growth of Female Participation Rates, by Age Group, Canada, Historical, 1953-1979, and Projected, 1980-2000, the High Projection(1)

	Age Group							
	15-19	20-24	25-34	35-44	45-54	55-64	65 and over	Total, 20 and over
Participation Rate Levels(2)								
1953	43.1	49.0	25.3	23.3	21.7	13.7	3.9	23.2
1960	42.3	50.0	28.9	31.0	32.2	22.6	6.1	28.5
1965	39.2	54.6	33.0	36.0	39.2	28.7	6.5	33.3
1970	39.5	60.8	41.3	42.5	43.0	31.6	5.5	38.4
1975	47.4	66.9	52.9	51.5	46.1	30.8	4.8	43.9
1979	50.8	71.3	60.4	59.4	52.1	34.0	4.2	48.6
1985	56.0	74.7	70.0	71.0	63.5	39.0	4.4	55.6
1990	58.5	77.0	76.0	80.0	72.7	48.0	6.0	61.1
1995	60.0	79.5	80.0	85.0	81.8	59.0	8.0	66.0
2000	60.0	82.0	83.0	88.0	91.0	70.0	10.0	70.6
Average Annual Percentage Rates of Growth of Participation Rates								
1954-1960	-0.3	0.3	1.9	4.2	5.8	7.4	6.6	3.0
1961-1965	-1.5	1.8	2.7	3.0	4.0	4.9	1.3	3.2
1966-1970	0.2	2.2	4.6	3.4	1.9	1.9	-3.3	2.9
1971-1975	3.7	1.9	5.1	3.9	1.4	-0.5	-2.7	2.7
1976-1979	1.7	1.6	3.4	3.6	3.1	2.5	-3.3	2.6
1980-1985	1.6	0.8	2.5	3.0	3.4	2.3	0.8	2.3
1986-1990	0.9	0.6	1.7	2.4	2.7	4.2	6.4	1.9
1991-1995	0.5	0.6	1.0	1.2	2.4	4.2	5.9	1.6
1996-2000	-	0.6	0.7	0.7	2.2	3.5	4.6	1.4

(1) The projected figures are not intended to be more precise than the general statements in the text.
(2) The historical estimates for years prior to 1975 have been adjusted to correspond to new labour force survey definitions.
Source: Statistics Canada, The Labour Force, Cat. 71-001, and unpublished tabulations from the labour force survey; and Long Range and Structural Analysis Division, Department of Finance.

The focus thus far in the discussion of the female participation rate projections has been on trends in the projected participation rates for individual age-sex groups. In this type of analysis, the participation rates of women who have reached a particular age in a given year are compared with the participation rates of women of similar age at a different point in time. Another very instructive way of approaching

this subject is to follow a particular group of women of labour force age from year to year, observing the participation rates they record as they reach successive ages. This is cohort analysis; it allows the patterns of labour force participation of individual groups of women over the course of their lives to be analyzed. Through the comparison of life-cycle patterns of labour force participation rates of different cohorts of women, the dynamics of changes in both the aggregate participation rate of women, and in the participation rates of individual age groups at particular points in time, may be brought out more clearly.

A limited amount of cohort analysis was introduced earlier in this paper, in Chapter 2. The following discussion will extend that analysis to include the projection period as well as the historical period. The discussion of cohort patterns will amplify the earlier discussion relating to the female participation rate projections; it will demonstrate in some detail, for example, how the strong growth projected in the participation rates of older age groups of women is related to their earlier participation rate patterns. The analysis is somewhat technical, however; the reader who does not wish to work his way through it may proceed directly to the discussion of the labour force projections, which begins on page 55.

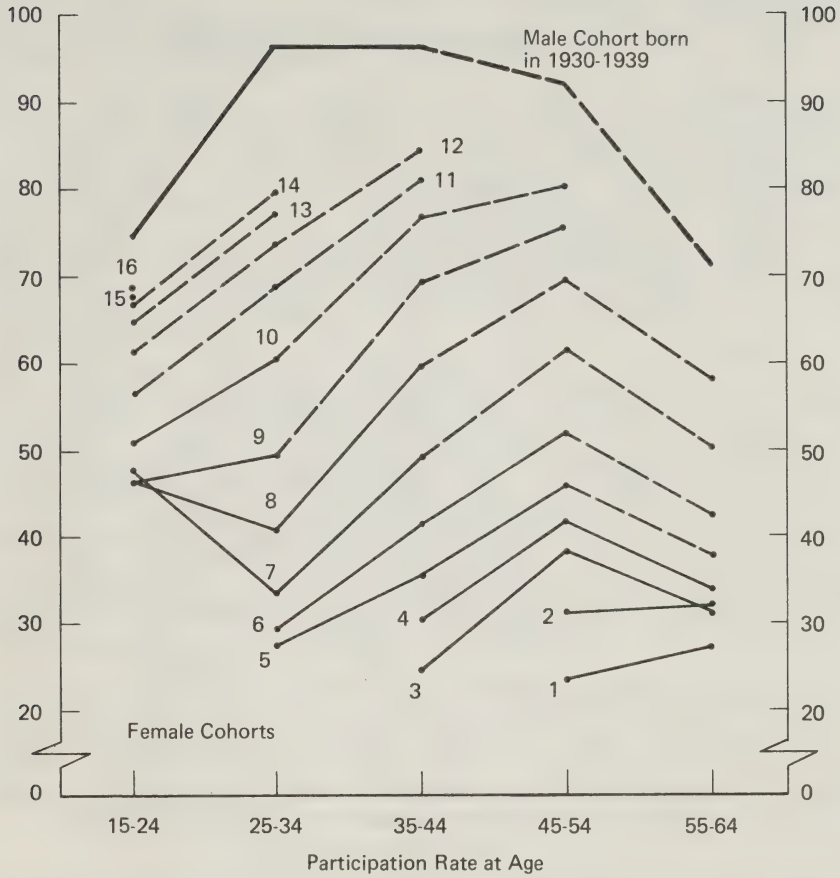
Charts 8 and 9 provide the participation rate patterns for 16 cohorts of women, over all or part of their lives from age 15 to age 64 (the age group 65 and over is dropped from this analysis for reasons of convenience). The patterns shown on the charts cover the historical period 1954-1979 (solid lines) and the projection period 1980-1999 (dashed lines).(1) The post-1979 data plotted in Chart 8 come from the low projection for women's participation rates, while projection data provided in Chart 9 refer to the high projection.

The bulk of the following discussion will be focussed around Chart 8. As an orientation to the chart, consider the data plotted for cohort 7. The women in this group were born in the decade 1930-1939. In 1954, when they were between the ages of 15 and 24, they recorded a participation rate of 47.6 per cent. By 1964, when these women had reached the ages of 25-34, their participation rate had fallen to 33.6 per cent. However, in 1974, when they constituted the age group 35-44, their participation rate had rebounded to a level of 49.4 per cent. In the low projection, the participation rate of women in this cohort is projected to rise to 61.7 per cent in 1984 when they are aged 45-54, before declining to 50.4 per cent in 1994 when they are 55-64 years old. The male life cycle pattern depicted in Chart 8 is the life cycle pattern of the cohort of men born in 1930-1939 (i.e., the cohort of men

(1) Projection-period data plotted in Charts 8 and 9 go up to 1999, not 2000. This is because the last year for which historical data are available is 1979. Using 1979 data in these charts, and the five-year cohort intervals, implies that the data points used in the projection period are for 1984, 1989, 1994 and 1999. The use of data going only to 1999, not 2000, makes no difference to the analysis.

Chart 8

Participation Rates of Women by Cohort, Historical, 1954-1979 and Projected, 1984-1999, Canada, the Low Projection



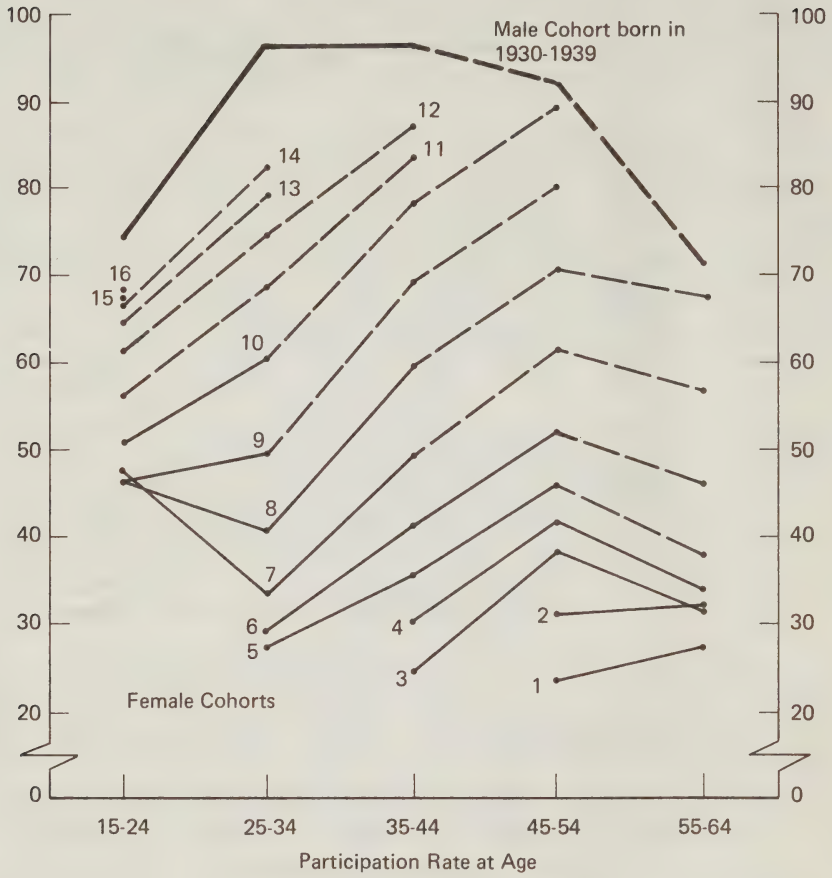
Female Cohorts by Date of Birth

1	1900 – 1909	5	1920 – 1929	9	1940 – 1949	13	1960 – 1969
2	1905 – 1914	6	1925 – 1934	10	1945 – 1954	14	1965 – 1974
3	1910 – 1919	7	1930 – 1939	11	1950 – 1959	15	1970 – 1979
4	1915 – 1924	8	1935 – 1944	12	1955 – 1964	16	1975 – 1984

Source: Statistics Canada, *The Labour Force*, Cat. 71-001, and unpublished tabulations from the labour force survey; and Long Range and Structural Analysis Division, Department of Finance.

Chart 9

Participation Rates of Women by Cohort, Historical, 1954-1979, and Projected, 1984-1999, Canada, the High Projection



Female Cohorts by Date of Birth

1	1900 – 1909	5	1920 – 1929	9	1940 – 1949	13	1960 – 1969
2	1905 – 1914	6	1925 – 1934	10	1945 – 1954	14	1965 – 1974
3	1910 – 1919	7	1930 – 1939	11	1950 – 1959	15	1970 – 1979
4	1915 – 1924	8	1935 – 1944	12	1955 – 1964	16	1975 – 1984

Source: Statistics Canada, *The Labour Force,* Cat. 71-001, and unpublished tabulations from the labour force survey; and Long Range and Structural Analysis Division, Department of Finance.

contemporaneous with the women in cohort 7).(1) This male cohort is one of only two cohorts of males for which observations, historical or projected, are available at each of the ages between 15 and 64. Since the age-sex structure of male participation rates has not changed by much over the historical period and is not projected to change by much in the projection period, the life cycle participation rate profile of this male cohort is representative of similar profiles for other male cohorts.

The first important point which the cohort profiles in Charts 8 and 9 illustrate is that the successive cohorts are projected to follow the same participation rate patterns as previous cohorts have followed in the past. Where particular cohort patterns have changed in the historical period, the most recent patterns have been used as a guide in developing the projections. Thus no major behavioural changes, which would be reflected in further changes in life cycle participation rate patterns, are incorporated in these projections. This point is evident when the profiles plotted in the charts are compared vertically, over 10-year intervals.

Beginning with participation rate changes as women move from the age group 45-54 to the 55-64 age group, Chart 8 plots historical observations on four cohorts of women in these age brackets. The women who comprise cohorts 1 and 2 increased their participation rates as they passed from the ages 45-54 to ages 55-64. Cohorts 3 and 4, however, reversed this pattern. The participation rates of women in these two cohorts fell between ages 45-54 and 55-64. In the projection period the women in cohorts 5 through 8 will pass, in their turn, through these age brackets. The participation rates of women in each of these cohorts are projected to decline between ages 45-54 and 55-64, following the most recent historical pattern set by the women in cohorts 3 and 4.

Similarly, there are historical observations on four groups of women at ages 35-44 and 45-54. The participation rates of the women in each of the cohorts numbered 3 through 6 increased between ages 35-44 and 45-54. In the projection period, cohorts 7 through 10 will pass through these age brackets. Again, a continuation of the pattern of increasing labour force participation between ages 35-44 and 45-54 is projected

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(1) The women who comprise cohort 8 are the only women (in addition to those who constitute cohort 7) for whom observations, historical or projected, are available at each of the ages 15-24 through 55-64. The women in cohort number 8 were born in the period 1935-1944. They reached the age 15-24 in the year 1959, age 25-34 in 1969 and so forth. Participation rate observations for even-numbered cohorts, such as cohort 8, are drawn from the years 1959, 1969, etc. through 1999; observations for odd-numbered cohorts, such as cohort 7, are drawn from the years 1954, 1964, etc. through 1994. For the women in all cohorts besides numbers 7 and 8, observations are available on only a part of their lives between ages 15 and 64. For the women in cohorts 1 to 6 observations, historical or projected, are available on only the latter part of the age span. For cohorts numbered 9 to 16, historical or projected observations are available on only the earlier years of the age span.

for the women in these cohorts. The same considerations apply to the women passing from ages 25-34 to ages 34-44. In the historical period, the participation rates of the women in cohorts 5 through 8 increased between ages 25-34 and 35-44; in the projection period, cohorts 9 through 12 are projected to continue this pattern as the women in these cohorts pass, in their turn, through this portion of the life cycle.

As was noted in Chapter 2, female participation rates have traditionally declined as women moved from the 15-24 to the 25-34 year old group. Recently, however, this pattern has been reversed. Chart 8 shows that the women in cohorts 7 and 8 exhibited the traditional pattern of participation rate decline during this portion of the life cycle. The women who comprise cohorts 9 and 10, however, reversed this pattern. In the projection period cohorts 11 through 14 will pass through this portion of the life cycle; the women in these cohorts are projected to maintain the more recent pattern and thus to increase their participation rates as they pass from ages 15-24 to ages 25-34. Finally, there are two groups of women for whom only one observation each is available. The women in these groups, cohorts 15 and 16, are projected to attain, at ages 15-24, participation rates higher than recorded by any previous group of women of similar age.

The second major point illustrated by these charts is that the strong participation rate growth projected for women in the higher age brackets results in large part from the fact that the women who will be in these age brackets in the future recorded much higher levels of participation rates at earlier stages of their lives than did the women currently in the older age groups. This virtually ensures that women now aged 25-34 and 35-44, for example, will have much higher participation rates as they move into higher age brackets than did their predecessors. This is the reason why male-female participation rate differentials in the higher age groups are projected to close quickly over the period 1980-2000. For these projected patterns not to obtain, major changes in female life-cycle patterns of participation rate changes would have to be projected.

To see how these considerations are reflected in cohort profiles, consider, for example, data plotted for the women in cohorts 5 and 6 in Chart 8. In 1964, when the women in cohort 5 were aged 35-44, their participation rate was 35.5 per cent. Five years later, in 1969, when cohort 6 reached the ages of 35-44, the participation rate of women in this group was 41.6 per cent, or about 6 percentage points higher than the corresponding participation rate of cohort 5. Chart 8 shows that the women in cohort 6 had also recorded a higher participation rate at the younger age 25-34 than did the women in cohort 5; thus the higher participation rate of women in cohort 6 at age 35-44 simply represented a carryover of the early difference. This cohort differential in participation rates carried through into the 1970s as well. Between 1974 and 1979 the participation rate of women aged 45-54 increased from 46.0 (the participation rate of women in cohort 5 when they were 45-54 years old) to 52.1 (the participation rate of women in cohort 6 when they reached the ages 45-54).

The importance of these relationships for the projection period can also be seen readily from the charts. At ages 35-44, for example, cohorts 7 and 8 recorded much higher participation rates than did either cohort 5 or cohort 6. In 1969 the women in cohort 6 occupied the age group 35-44. In 1979 the women in cohort 8 had replaced them in that age bracket, and had a participation rate almost 20 percentage points higher. Over the 10 years 1969-1979, the replacement of the women in cohort 6 by the women in cohort 8 in the age bracket 35-44 resulted, therefore, in an increase in the participation rate of women in that age bracket of almost 20 percentage points, which represented an average annual growth rate of 3.6 per cent per year. Between 1979 and 1989, the participation rate of women aged 45-54 is projected to grow at an average annual rate of 2.9 per cent. This strong growth will result in part from a similar replacement in the age bracket 45-54 of women in cohort 6 by the women in cohort 8. Similar considerations underlie the projection of strong participation rate growth in the other higher age brackets over the period to 2000.

Comparing the data of Charts 8 and 9, the increase in female participation rates in the earlier years of the life cycle is somewhat steeper, and the decline in participation in the later stages of the life cycle is somewhat less steep, in the high projection than in the low projection. The two alternatives presented here serve to illustrate that for women there is a range of possible life cycle participation rate patterns which might emerge over the projection period; these can lead to quite different participation rate growth profiles. Nevertheless, as was stressed earlier, it would take major changes in life cycle behaviour over the projection period to limit to any great extent the growth in the aggregate participation rate of women. Indeed, successive cohorts of women would have to revert to older forms of behaviour for growth in the aggregate female participation rate to slow down drastically since, for example, the youngest cohorts of women have recorded significantly higher participation rates at ages 15-24 than did even the cohorts of those women who registered remarkably large increases in participation rates in passing from the ages 15-24 to ages 25-34 in the recent past.

Table 16 summarizes the projections discussed above for adult men, adult women and young people under 20, and provides the projected aggregate participation rate as well. Historical data are provided for comparative purposes. The participation rate for the whole population is projected to increase from 63.4 per cent in 1979 to 71 per cent in 2000 in the low projection, and to over 73 per cent in 2000 in the high projection. In the low projection the absolute increase in the aggregate participation rate is slightly less than, and in the high projection the increase is somewhat greater than, the corresponding increase over the period 1954-1979.

In both the high and low projections, the aggregate participation rate is projected to rise to over 67 per cent in 1985; this represents an average annual rate of increase over the period 1980-1985 very similar to that recorded during the 1970s. The driving force behind the growth in the aggregate rate is continued strong growth in the participation rate of adult women. The adult female participation rate is projected to increase almost as quickly from 1980 to 1985 as it did during the years 1976-1979, reaching a level of over 55 per cent in 1985. Over

the same period, moderate growth in the participation rate of young persons, and a modest decline in the participation rate of adult men, are projected.

Table 16

Levels and Average Annual Percentage Rates of Change in Participation Rates of Men and Women Aged 20 and Over and Persons Aged less than 20, and the Total Participation Rate, Canada, Past and Projected(1)

	Young Persons	Adult Men	Adult Women		Total	
			Low	High	Low	High
Participation Rate Levels(2)						
1953	51.9	86.4	23.0		54.4	
1960	46.3	86.0	28.4		55.8	
1965	42.3	84.7	33.1		56.3	
1970	42.4	83.2	38.2		57.8	
1975	51.1	82.4	43.9		61.1	
1979	54.1	81.7	48.6		63.3	
1985	58.0	81.5	55.6		67.2	
1990	59.3	80.8	59.4	61.1	68.8	69.7
1995	60.0	80.0	62.6	66.0	70.1	71.7
2000	60.0	79.2	65.3	70.6	71.0	73.5
Average Annual Percentage Rates of Change in Participation Rates						
1954-1960	-1.6	-0.1	3.1		0.3	
1961-1965	-1.8	-0.3	3.1		0.2	
1966-1970	-	-0.4	2.9		0.5	
1971-1975	3.8	-0.2	2.8		1.1	
1976-1979	1.4	-0.2	2.6		0.9	
1980-1985	1.2	-	2.3		1.0	
1986-1990	0.4	-0.2	1.3	1.9	0.5	0.7
1991-1995	0.2	-0.2	1.1	1.6	0.4	0.6
1996-2000	-	-0.2	0.8	1.4	0.3	0.5

(1) The projected figures are not intended to be more precise than the general statements in the text.
(2) The historical estimates for years prior to 1975 have been adjusted to correspond to new labour force survey definitions.

Source: Statistics Canada, The Labour Force, Cat. 71-001, and unpublished tabulations from the labour force survey; and Long Range and Structural Analysis Division, Department of Finance.

After 1985, the rate of increase of the adult female participation rate is projected to slow down, quickly in the low projection and more slowly in the high projection. The adult male participation rate is projected to decline over the period 1986-2000 at rates similar to those recorded during the historical period. The growth in the participation rate of young persons is projected to slow rapidly in the second half of the 1980s and to cease by the second half of the 1990s. Over the period 1986-1995 the growth in the participation rate of young people is projected to result entirely from a steady reduction in the male-female participation rate differential for this group. The combination of these trends results in a projection of a gradual deceleration of growth in aggregate participation over the period 1986-2000.

3.3 Labour Force Growth to 2000

The participation rate projections developed in the preceding section, when combined with the population projections made earlier, yield projections of labour force growth to 2000. Table 17 provides the projected levels and average annual percentage rates of growth of the labour force, and historical data for purposes of comparison. In both the high and low projections, the rate of growth of the total labour force is projected to decelerate steadily over the period to 2000. This reflects, of course, projected deceleration in both source population and participation rate growth over this period. The growth in the adult female labour force is projected to slow down only slightly in the period 1980-1985 from the rate of growth recorded during the second half of the 1970s, but then to decelerate more quickly in the second half of the 1980s and during the 1990s. The slowdown is greater, of course, in the low projection than in the high projection. The deceleration in the growth of the adult male labour force is projected to be strongest during the second half of the 1990s. The youth labour force is projected to decline during the 1980s, as the decline in the population size of this group more than offsets the growth in participation rates. The rate of decline in the youth labour force is projected to slow during the second half of the 1980s; during the 1990s, positive youth labour force growth is projected to resume.

The two projections for adult female participation rates serve to illustrate the degree of sensitivity of the projections of the labour force to the alternative assumptions made in this paper. Over the 15-year period 1986-2000, during which the two projections diverge, average annual labour force growth is projected to be 1.3 per cent in the low projection and only marginally higher, at 1.5 per cent, in the high projection. Male participation rates are also subject to uncertainty, and so there is a range of possible participation rate projections for adult males as well as for adult females. Since the population weights of adult males and adult females are about the same, alternative projections for adult male participation rates would have to cover as wide a band as those for adult females to affect the projections for the labour force to the same degree. Since the foreseeable variation in participation is much smaller for adult males than for adult females, possible variation in labour force growth stemming from different alternatives for adult male rates would be also much smaller. Finally, the projections for young people's participation rates are highly speculative in nature. However, since their weight in the

population is much smaller than the weight of the adult groups, the impact of errors in the projection of their participation rates on overall labour force growth is commensurately also much smaller.

Table 17

Levels and Average Annual Percentage Rates of Growth of the Labour Force, Men and Women Aged 20 and Over, Persons Aged less than 20, and Total, Canada, Past and Projected(1)

	Young Persons	Adult Men	Adult Women		Total	
			Low	High	Low	High
Labour Force Levels in Thousands(2)						
1953	540	3839	1023		5402	
1960	623	4345	1454		6422	
1965	734	4590	1844		7168	
1970	856	5111	2433		8400	
1975	1153	5669	3152		9974	
1979	1259	6121	3827		11207	
1985	1111	6841	4926		12879	
1990	1056	7201	5605	5773	13862	14030
1995	1103	7446	6192	6532	14742	15082
2000	1165	7673	6738	7287	15576	16125
Percentage Rates of Growth of the Labour Force						
1954-1960	2.1	1.8	5.2		2.5	
1961-1965	3.3	1.1	4.9		2.2	
1966-1970	3.1	2.2	5.7		3.2	
1971-1975	6.1	2.1	5.3		3.5	
1976-1979	2.2	1.9	5.0		3.0	
1980-1985	-2.1	1.9	4.3		2.3	
1986-1990	-1.0	1.0	2.6	3.2	1.5	1.7
1991-1995	0.9	0.7	2.0	2.5	1.2	1.5
1996-2000	1.1	0.6	1.7	2.2	1.1	1.3

(1) The projected figures are not intended to be more precise than the general statements in the text.
(2) Data for years prior to 1975 have been adjusted to correspond with new labour force survey definitions.

Source: Statistics Canada, The Labour Force, Cat. 71-001, and unpublished tabulations from the labour force; and Long Range and Structural Analysis Division, Department of Finance.

One issue which has not been dealt with in this paper but has been treated extensively elsewhere is the sensitivity of the labour force projections to changes in the assumptions underlying the population projection. A recent background study prepared for the Economic Council of Canada by Frank Denton, Christine Feaver and Byron Spencer deals with this issue in detail.(1) The Denton-Feaver-Spencer study provides labour force projections based on three different population projections; the fertility rate and immigration assumptions underlying the "medium" and "low" projections bracket the assumptions made in this paper. The variation in labour force growth generated between these two scenarios should serve, therefore, to illustrate the sensitivity of the labour force projections in this paper to similar variations in assumptions about population growth.

Table 18 below provides the main assumptions underlying the medium and low population projections in the Denton-Feaver-Spencer study. As well, it provides the average annual labour force growth rates which result when the participation rate projection of that study is applied to the alternative source population projections. Since the participation rate projection in the Denton-Feaver-Spencer study differs from the participation rate projection made in this paper, only the difference in labour force growth between the two scenarios, and not the absolute level of labour force growth, is relevant for this discussion.

Table 18

Alternative Population and
Labour Force Growth Projections,
Canada, 1986-2001

	Population Projection	
	Medium Scenario	Low Scenario
Fertility rate, 1986-2001	2.1	1.5
Average annual net immigration, 1986-2001	80,000	20,000
Average annual labour force growth, 1986-2001	1.1	0.6

Source: Denton, Feaver, and Spencer, op. cit.

The different population projections result in a difference in the projected average annual labour force growth rate of half a percentage point. As was noted above, the fertility rate and immigration assumptions underlying these scenarios bracket the assumptions underlying the population projection used in this paper. It therefore seems reasonable to apply this band to the labour force projections made in this

(1) Frank Denton, Christine Feaver, and Byron Spencer, The Future Population of Canada: Projections to the Year 2051, a background study prepared for the Economic Council of Canada, 1979. The information used here is published in Appendix C of The Economic Council of Canada, "One in Three", op. cit.

paper. In the labour force projection based on the low projection for women's participation rates, projected average annual labour force growth over the period 1986-2000 is 1.3 per cent. By varying the assumptions underlying the population projections, projected labour force growth could then vary over the range from about 1.0 per cent to about 1.5 per cent. Applying the same band to the high labour force projection in this paper indicates that growth could vary from about 1.3 per cent to about 1.8 per cent. Thus, depending on the combination of participation rate and population projections chosen, average annual labour force growth over the period 1986-2000 could vary from about 1.0 per cent to about 1.8 per cent. This is a wide range of possibilities.

The labour force projections developed in this paper provide working assumptions which will be used in the analysis of a number of medium-term and longer-term issues. The projections remain subject to a significant degree of uncertainty, stemming from potential errors in the projection of population growth as well as from the difficulties associated with the projection of participation rates.

4. SUMMARY AND CONCLUSIONS

This paper has examined the main patterns of change in the participation rates of adult women, adult men and young people in Canada since the early 1950s. The analysis of past trends in participation rate movements has in turn formed the basis for the projection of participation rates to the year 2000.

Most longer-term projections of participation rate growth prepared in the past have tended to underestimate the future growth in the labour force participation of adult women in both Canada and the U.S. This paper has suggested that a wide variety of sociological and economic forces has been responsible for the remarkably steady growth since the early 1950s of female participation rates. These factors, many of which are international in their scope, include: the rising material aspirations of families; the development since the 1950s of new birth control techniques; very pronounced changes in attitudes with respect to desired family size; changes in women's personal aspirations, which have been reflected in part in the increasing average educational attainments of women; the sharply rising incidence of marriage breakdown and divorce; the expansion of the service sectors of industrialized economies; and the growth in the range of household labour-saving devices and convenience products. One of the most interesting and important features of the growth in female labour force participation in the 1970s has been that the largest increases in participation rates were recorded by women with very young children (aged under six years) present in the home. This is indicative of the strength of the various forces which have been operating to increase the labour force participation of women.

The paper has suggested that the apparent stability of the participation rate of men aged 25-54 in Canada, over much of the period since the early 1960s, has masked the fact that different influences have been working in opposite directions. Changes in the socioeconomic characteristics of adult men, as reflected in their rising average educational attainments, have probably operated to increase their participation rate. On the other hand, a variety of factors, including changes made to the social security system, have worked in the direction of reducing the participation rate of men aged 25-54. Part at least of the observed decline between 1965 and 1972 of the participation rate of this group of men appears to have been related to factors such as the increased availability and improved generosity of disability pensions, and the introduction of the federal government's Occupational Training of Adults program as well as the expansion of graduate school enrolments.

The expansion of private sector pension plans, changes in the structure of the public sector pension system, the growth in real incomes over the postwar period, and the growth in the labour force participation of wives appear to have been the main factors facilitating retirement at

age 65 for most men. The steady growth in the proportion of men retiring at or before age 65 underlies the steady decline in the participation rate of men aged 65 and over, and the more moderate decline in the participation rate of men aged 55-64. The increased availability of disability pensions may have contributed to the decline in the participation rate of the latter group, to the extent that this facilitated the withdrawal from the labour force of some men aged 55-64 who were in poor health.

The participation rates of men aged 20-24, and young persons of both sexes aged 15-19, fell during most of the 1950s and 1960s, before rising again during the 1970s. These patterns appear to be related to changes in the economic returns to higher education. The existence in the 1950s and 1960s of high monetary rewards to further education was associated with declining participation rates and rising school enrolment rates; the decline in the returns to education in the 1970s was associated with declining (or more slowly rising) enrolment rates, and rising participation rates.

Over the period to 2000, the participation rate of men aged 20 and over is projected to decline at about the same rate as it has since the early 1950s. The participation rates of men in each of the main over-25 age groups are projected to decline. The participation rate of men aged 20-24 is projected to rise moderately until 1990, and then to level off, while that of men aged 15-19 is projected to increase over the first half of the 1980s, and then to stabilize.

Female participation rate growth to 2000 has been projected on the basis of judgements made with respect to what differentials between male and female participation rates may exist in 2000, and the time path of the narrowing of these differentials over the next 20 years. Two projections of future female participation rate increases have been developed. In both of these projections, positive male-female participation rate differentials are projected to obtain in 2000 in the case of the age groups 20-24, 25-34 and 35-44. For the other age groups, the differentials are eliminated by 2000 in the high projection; in the low projection, positive differentials are projected to continue to exist for these other groups. In each projection, the participation rate of women aged 20 and over is projected to grow by 2.3 per cent per year on average from 1979 to 1985. After 1985, the two projections diverge. Adult female participation rate growth is projected to average 1.6 per cent per year over the period 1986-2000 in the high projection, and 1.1 per cent per year over the same period in the low projection. In each projection, the average annual rate of growth of both female participation rates, and the total participation rate, exhibits a profile of decelerating rates of increase over the next 20 years.

The participation rate projections have been combined with a projection of working-age population growth to provide projections of labour force growth to 2000. Labour force growth in Canada decelerated during the 1970s, from an average annual rate of growth of 3.5 per cent over the period 1971-1975, to 3.0 per cent per year on average from 1976 through 1979. This pattern of labour force growth at declining rates of increase is projected to obtain over the period to 2000; it reflects projected

declines in rates of growth of both the working-age population and the aggregate participation rate. Over the period 1980-1985, the labour force is projected to grow at an average annual rate of 2.3 per cent.

As was noted earlier in the paper, a number of different participation rate projections would have been consistent with the analysis of Chapter 2. Ten years ago, the projections of the adult female participation rate and the aggregate participation rate developed here would have been regarded as being unrealistically high. In view of the strength of the growth of female labour force participation in the recent past, however, it may well be that the main risks in the participation rate projections are that they are too low, rather than too high, in at least the medium term. In other words, it may very well be that the male-female participation rate differentials are closed more quickly, rather than less quickly, than has been projected here.

APPENDIX 1: WOMEN'S LABOUR FORCE PARTICIPATION, REAL WAGES AND HUSBANDS' INCOMES

The model used by economists as a starting point for the explanation of labour supply patterns in general is the labour-leisure model. Within this simple framework, an individual's decision regarding how much time is spent working in the marketplace is determined, given the individual's preferences for income and leisure, by the real wage which can be earned by working and by the level of non-wage income available. For the kinds of preference functions usually assumed, an increase in the level of non-wage income available to the individual leads to a reduction in the amount of time spent working.(1) An increase in the real wage, however, does not have a theoretically unambiguous effect. An increase in the real wage raises the cost of leisure time to the individual, which leads to a reduction in the consumption of leisure time (i.e., an increase in time spent working); at the same time, the increase in the real wage increases the individual's income, thereby tending to increase his consumption of leisure time (i.e., reduce the amount of time spent working).

While the labour-leisure model is stated in terms of an individual's labour supply, it has been widely used to explain the growth in aggregate female labour force participation rates in North America during the 20th century.(2) Over much of the 20th century, and not just the postwar period, women's labour force participation rates have risen steadily, while the real wage and salary earnings of both men and women have risen dramatically. For the labour-leisure model to account for the rise in female participation rates, given these circumstances, it must be shown empirically that the positive substitution effect on labour force participation of increases in the real wages of women outweighs the negative income effect of these real wage increases, and the negative effect of increases in husbands' incomes.

One way of applying the labour-leisure model to the issue of the growth over time of female participation rates is to estimate the parameters of the model with cross-section data, and to apply these parameter estimates to changes over time in the explanatory variables of the model. Several cross-section studies of the labour supply of women have been carried out in the U.S., using inter-city data derived from the decennial censuses of 1940 through 1970. By comparing the results of studies based on data from successive censuses it is possible

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(1) Non-wage income can be, for example, property income, or in the case of married women, the incomes of their husbands.

(2) For a discussion of the problems involved in the application of the model of individual labour supply to the study of economy-wide measures of labour supply, see James J. Heckman, "A Partial Survey of Recent Research on the Labor Supply of Women", American Economic Review: Papers and Proceedings, Vol. 67, No. 2 (May 1978), pp. 200-207.

to see how the relationships between participation rates and real wages and incomes have evolved over time, and how stable they have been over time.

In an early study, Mincer, using 1950 inter-city census data, estimated an equation relating married women's labour force participation to their own real wages and their husbands' incomes. He found that the participation rate of married women responded positively to growth in their own wages and negatively to growth in their husbands' wages, with the response to their own wages being the more powerful effect. Mincer suggested that as much as 75 per cent of the growth in married women's participation over the period 1889 to 1959 could be explained by applying his equation to time series data.(1)

Glen Cain re-estimated Mincer's equations using 1950 census data and, while his results verified the major finding that the substitution effect was significantly greater than the income effect, he also found that the coefficient estimates were somewhat different.(2) He also examined 1940 and 1960 census inter-city data. He found that the wage coefficients were lower relative to income coefficients in both these years. Cain's results indicated, first, that less of the increase over time in married women's labour force participation could be explained in terms of the growth of real wages and incomes than Mincer had suggested, and second, that coefficient estimates were somewhat unstable from census to census.

Bowen and Finegan carried out similar studies on the 1940, 1950 and 1960 census inter-city data and obtained similar qualitative results, with the parameter estimates again varying considerably from census to

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(1) This assertion is doubtful for several reasons. First, Mincer's equation could not predict the decade-to-decade changes with any consistency. For the periods 1889-1919, 1919-1929, 1929-1939, 1939-1949 and 1949-1959, the predicted changes as a percentage of actual changes were, respectively, 50, 119, 100, 77 and 68 per cent. Moreover, he may have used a faulty measure of male employment income, which understated the actual growth in this variable. (On this point see Bowen and Finegan, op. cit., pp. 209-210. Bowen and Finegan show that the use of a more accurate measure of male employment income growth results in the proportion of the change in married women's participation rates explained by Mincer's equation being reduced.) As well, Mincer's equation ignored other factors such as schooling and industry mix. When factors such as these are allowed for, the proportion of the total change in women's participation rates explained by growth in women's wages is reduced. See Bowen and Finegan, op. cit., p. 173 for a discussion of the effect on the estimated coefficient of wages of the inclusion of a variable to capture the effects of industry mix on women's participation.

(2) Cain attributed the differences to computational errors in Mincer's work. Cain also found that the effects of other variables such as schooling, unemployment and the presence of young children were significant, contrary to Mincer's findings. See Glen G. Cain, Married Women in the Labour Force, (University of Chicago Press, Chicago, 1966), pp. 23-24.

census.(1) In applying their estimated cross-section parameters to time series data (using the 1950 parameter estimates for the period 1948-1955 and the 1960 parameter estimates for the period 1955-1965), they found that a significant portion of the change in participation rates of married women aged 14-54 over the period 1948-1965 was accounted for by economic factors. These economic factors included the growth in wages, and husbands' incomes.(2) In their study the net impact of the overall growth in wages on married women's participation, though positive, was limited as the negative effect of the increase in husbands' incomes offset to a large extent the increase in participation attributed to growth in real wages of women.

Orley Ashenfelter and James Heckman re-estimated the income and substitution effects for wives using the 1960 census inter-city data.(3) Their results were qualitatively similar to previous results, showing that women's labour supply was more responsive to changes in their wages than to changes in family income.

A more recent study by Allan King on the 1970 census inter-city data shows that, to some extent, the relationships between participation rates and real wages and incomes had weakened by 1970.(4) For women with children under six years of age, the results were qualitatively and quantitatively similar to the results obtained by Bowen and Finegan with the 1960 census data. Both income and wage variables in the regression equation were statistically significant, and the estimated size of coefficients was similar in all specifications of the equation. For women with older children, however, the variable for husbands' income was always insignificant and, in some specifications of the equation, even had the wrong sign. The variable representing women's wage and salary earnings was insignificant in two of the three specifications used. Moreover, the estimated size of the female-earnings coefficient fluctuated over a wide range of values from specification to specification. One interpretation of this is that for women without the responsibilities of young children, the importance of real wages and incomes in determining labour force participation was much diminished from earlier periods. Another interpretation is that the earlier relationships had not been for the most part causal in nature. As real wages and incomes, and labour force participation rates grew independently, the former statistical relationship was gradually eroded.

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(1) Bowen and Finegan, op. cit.
(2) ibid., p. 266.
(3) Orley Ashenfelter and James Heckman, "The Estimation of Income and Substitution Effects in a Model of Family Labour Supply", Econometrica, Vol. 42, No. 1 (January 1974), pp. 73-86.
(4) King, op. cit.

Cross-section studies based on aggregate inter-city data are not available for Canada. One study based on census cross-section micro data is available, however.(1) One of the results of this study (which used data from the 1971 census), was that the probability of a wife's working increased with her "offered" wage but that, for those wives who worked, an increase in the offered wage reduced the annual hours of work. The net effect of an increase in offered wages on the overall labour supply of women was found to be negative for some age groups, positive for others, and the estimated coefficients were for the most part insignificant. Because the results of studies based on micro data are very sensitive to the particular methodology used, it would be premature to draw strong conclusions from these results. Nevertheless, it is worth noting that the weakness of the overall relationship between wages and labour supply in this study is not inconsistent with the weakness of the relationship identified in King's study.

A second approach to the examination of the relationships among participation rates, real wages, and incomes is the application of the labour-leisure model directly to time series data. The empirical results of this type of analysis have also varied significantly. Ray Fair, using U.S. data, found both positive and negative effects of real wages on labour force participation, depending on the age group of women and the specification of the lag distribution of real wages. Moreover, for 6 of the 16 age-sex groups which Fair studied, he found that the sign of

(1) M. Nakamura, A. Nakamura and D. Cullen, "Job Opportunities, the Offered Wage, and the Labour Supply of Married Women", American Economic Review, Vol. 69, No. 5 (December 1979), pp. 707-805. Micro data are distinguished by the fact that the observations are made on individuals rather than on groups of individuals. An important issue associated with the use of this type of data is the need to control for the variation in labour force participation attributable to factors such as personal intelligence, motivation, etc., which cannot generally be measured directly. Controlling for these personal characteristics is important first, because they explain a great deal of the variation in labour force behaviour among individuals and second, because they also explain much of the variation in earnings among individuals. As these personal characteristics determine a great deal of the joint variation in labour force behaviour and earnings among individuals, the estimated relationship between labour force participation and wages can be distorted if appropriate variables are not devised to control for their effects. Glen Cain and Harold Watts have provided a discussion of the characteristics of micro data and of the various statistical and modelling problems raised by the use of such data. As well, they have reviewed several U.S. studies based on micro data. See Glen G. Cain and Harold W. Watts, "Toward A Synthesis and Summary of the Evidence" in Glen G.Cain and Harold W. Watts, eds., Income Maintenance and Labour Supply, (Rand McNally, Chicago, 1973).

the real wage effect changed as he varied the lag distribution, although the explanatory power of the regression was virtually the same from equation to equation.(1)

A similar study by Michael Wachter also produced inconclusive results with regard to the relationship between real wages and women's labour force participation.(2) Wachter found that he could insert a time trend in place of the wage rate without affecting his overall results or the significance of the various independent variables in his equation. He was led to the following conclusion:

> Although it is desirable to test whether the changes in participation are due to changes in wages or to changes in the sociological climate, the data are not sufficiently rich to distinguish between these two effects. The difficulties arise because of the associated problems of statistical collinearity and joint determination in theory between the wage and sociological trend effect. The wage variable therefore, may be a proxy for the trend effect.(3)

Lawrence Officer and Peter Andersen tried a real wage variable in their study based on Canadian time series data.(4) They discarded it, however, because the inclusion of both a wage rate and an income variable in the

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(1) Ray C. Fair, "Wage Rates and Labor Force Participation", The Review of Economics and Statistics, Vol. LIII, No. 2 (May 1971), pp. 164-168. Fair's equations did not include variables to measure income effects. He interpreted the coefficient of the wage variable in his regressions as measuring the net of income and substitution effects. As well, his equations did not include variables to control for non-economic factors such as schooling and the presence of children, and other economic factors such as industry mix.

(2) Michael L. Wachter, "A Labor Supply Model for Secondary Workers", The Review of Economics and Statistics, Vol. LIV, No. 2 (May 1972), pp. 141-151.

(3) ibid. p. 147. An interesting example of the time trend characteristics of a real wage variable is found in Leonnall C. Andersen, "An Explanation of Movements in the Labor Force Participation Rate, 1957-76", Federal Reserve Bank of St. Louis Review, Vol. 60, No. 8 (August 1978), pp. 7-21. Andersen attempted to explain changes in the aggregate U.S. participation rate from 1957 to 1976 with a variety of economic variables, including (permanent and transitory) real wage rate measures. The U.S. participation rate declined from 1956 to 1964, before rising at a relatively steady rate thereafter. Andersen's estimated permanent real wage rate coefficient has a negative sign for the 1957-1964 subperiod, and a positive sign thereafter. Andersen interpreted the change in the sign of this coefficient as reflecting a structural change in the relationship between real wages and participation. An equally plausible interpretation is that the real wage variable acted as a time trend in the equation, picking up a negative sign during the period in which it and the participation rate were moving in opposite directions, and a positive sign during the post-1964 period, when both real wage rates and participation rates were, for the most part, rising.

(4) Officer and Andersen, op. cit.

same equation introduced severe multi-collinearity problems. The income variable was left in the regressions; its estimated positive coefficient was interpreted as a "standard of living effect". In another Canadian time series study, Neil Swan found that wages were insignificant determinants of women's participation.(1) The sign of the wage coefficient proved to be negative and insignificant in all provinces except for Quebec. In Quebec, it was positive and insignificant. Swan's most powerful explanatory variable was a time trend.

The time series studies reviewed have produced, for the most part, inconclusive results with regard to the relationship between real wages and the labour force participation rates of women.(2) Indeed, it has been suggested that real wage variables may have acted simply as time trends in regression equations. However, even this property of real wage variables has deteriorated in recent years. In the U.S. real average wages and salaries fell marginally from 1973 to 1979. During this period, as was noted earlier, rapid growth in female participation rates occurred. In Canada, real average wages and salaries grew strongly until 1976; however, over the period 1977-1979, they declined at an average annual rate of 1.7 per cent. Over this three-year period, the participation rate of women in Canada increased strongly.(3)

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(1) Swan, op. cit.

(2) For an example of the use of a different type of statistical analysis see John L. Goodman, Jr., "Spectral Analysis of the Dependence of Labor Force Participation on Unemployment and Wages", The Review of Economics and Statistics, Vol. LVI, No. 3 (August 1974), pp. 390-393. Goodman's conclusion was that "labor force participation does not vary systematically over time with either the unemployment rate or the real hourly wage rate, either in the short run or the long run". (p. 392)

(3) In his major study of labour force trends, Clarence Long related trends in the ratio of female to male earnings to trends in the ratio of women to men in the labour force in five countries. He concluded:

> In the United States, the earnings ratio did not really begin to rise until after World War I, whereas the labor force ratio had been moving upward since 1890. In Canada no relative rise in female earnings occurred until after 1931, although female participation in the labor force, relative to that of males, had been advancing rapidly and steadily since 1911. In New Zealand the earnings ratio was virtually constant from before World War I until after World War II, but the labor force ratio rose after 1926. In Britain the two ratios moved almost oppositely throughout; and in Germany, they moved in contrary directions during 1925-1939. All in all, the ratio of female to male earnings in manufacturing does not help to explain the tendency of females to flow into the labor force more rapidly than males. (p. 133)

These results suggest that, in earlier periods as well, movements in the labour force participation rates of women may not have been related in a meaningful way to movements in the real wages of women. For a fuller discussion of the early inter-country comparisons see, Clarence D. Long, The Labor Force under Changing Income and Employment, National Bureau of Economic Research, (Princeton University Press, Princeton, 1958), Chapter 7.

One of the problems with the evidence linking growth in real wages and growth in female participation rates arises because time series data on the employment earnings of the different age-sex groups comprising the labour force do not exist. In regression equations in which a real wage variable is used to explain movements in the participation rate of a particular demographic group, an economy-wide aggregate real wage is used as a proxy for the real wage of the particular group. This could be a significant source of error affecting estimates of the relationship between real wages and participation rates. Table 19 shows the degree to which average labour income in Canada varied from industry to industry over the period 1950-1979. The industries in which the employment share of women is highest are finance, insurance and real estate, wholesale and retail trade, commercial services, and non-commercial services. In three of these four industries, the growth rates of average labour income over this period were lower than the economy-wide averages, and the relative wages and salaries of persons employed in these industries deteriorated. At a minimum, these data suggest that in Canada, an economy-wide measure of real wages may be a poor proxy for the real wages earned by any particular demographic group.(1)

Table 19

Growth in Labour Income Per Paid Worker, by Industrial Sector, Canada, 1950-1979

	Average Annual Growth Rates		
	1950-1959	1960-1969	1970-1979(1)
1. Agriculture	7.3	5.9	7.7
2. Forestry	5.9	6.5	11.4
3. Fishing	4.5	4.7	11.1
4. Mining	5.6	5.3	11.6
5. Manufacturing	6.0	5.2	10.2
6. Construction	5.7	6.2	9.9
7. Electric power and gas distribution	6.3	6.3	8.1
8. Transportation and communication	4.9	5.5	10.2
9. Wholesale and retail trade	5.0	4.5	8.2
10. Finance, insurance and real estate	4.7	4.7	9.3
11. Commercial services	4.7	4.1	7.9
12. Non-Commercial services	5.3	6.1	10.9
Total economy	5.5	5.2	9.6

(1) 1979 data are preliminary.
Source: Unpublished information obtained from the Input-Output Division of Statistics Canada.

(1) An example of the importance of relating the labour force participation rates of a particular demographic group to the wages relevant to that group, as opposed to economy-wide aggregate wages, is provided in the discussion in Chapter 2 of the enrolment and participation rates of young men.

Table 20

Participation Rates of Wives, Cross-Classified by their Age and by their Husbands' Income Positions, United States, March 1960 and March 1977(1)

	Total	Husbands' Income Position			
		Lower	Lower Middle	Upper Middle	Upper
All ages					
1960	33.7	40.5	38.8	32.9	25.0
1977	53.6	56.5	58.9	54.9	45.5
Absolute change	19.9	16.1	20.1	22.0	20.5
Relative change (per cent)	59.1	40.0	51.8	66.9	82.0
Wives under 35					
1960	28.2	34.9	33.1	26.4	18.5
1977	54.1	58.0	59.1	53.2	43.2
Absolute change	25.9	23.1	26.0	26.8	24.7
Relative change (per cent)	91.8	66.2	78.5	101.5	133.5
Wives aged 35 and over					
1960	37.7	44.5	44.2	38.4	28.5
1977	53.2	54.6	58.6	56.5	46.8
Absolute change	15.5	10.1	14.4	18.1	18.3
Relative change (per cent)	41.1	22.7	32.6	47.1	64.2

(1) Married women (husbands present) aged 55 and over with no own children under 18 years are excluded from these data.
Source: Paul Ryscavage, "More Wives in the Labor Force Have Husbands with 'Above-Average' Incomes", Monthly Labor Review, Vol. 102, No. 6 (June 1979), pp. 40-42.

It has been shown above that the statistical relationship between real wages and women's labour force participation has weakened over time in both Canada and the U.S. It is interesting to note as well that the traditional relationship between husbands' incomes and wives' participation has been similarly eroded. This was suggested by the weakness of the statistical relationship between husbands' incomes and wives' participation for families without young children in King's regressions based on 1970 data, as compared to similar regressions by Bowen and Finegan on 1960 data. More recent evidence to this effect is provided by the cross-tabulations of participation and income data provided in Table 20. These data illustrate the extent to which this relationship has changed over time in the U.S. In March 1960, participation rates of both wives aged less than 35, and those aged 35 and over, showed a perfect negative relationship to their husbands' income positions (four

income classes are considered). In the case of wives aged 35 and over, absolute and relative participation rate increases over the next 17 years showed a perfect positive relationship to husbands' incomes: the higher the husbands' incomes, the larger the participation rate increases of wives. By March 1977, wives in this age group whose husbands' incomes put them within the middle two income classes had participation rates higher than those of wives whose husbands occupied the lowest income class. The same sorts of relationships developed over the 17 years in the case of wives aged less than 35 years, although not quite as strongly as in the case of wives in the older age group.

Data which would permit a similar comparison for Canada of the relationship between husbands' incomes and wives' participation rates over the span of a number of years are not currently available. However, Table 21 presents estimates of the participation rates of wives in April 1978 cross-classified by age, and 1977 family income less wives' wage and salary income. These data suggest that, if there had been an equally tight negative correlation several years ago between the labour force participation of wives and their husbands' incomes in Canada as there had been in the U.S., this relationship had loosened considerably by 1977. In the case of all of the age groups, the participation rates of wives in the $4,000-7,999 income class were lower than those of wives in the under-$4,000 class. In all cases, however, participation rates of wives in the $8,000-11,999 class were substantially higher than those of wives in the $4,000-7,999 income group. Mixed patterns were recorded

Table 21

Participation Rates of Wives, Cross-Classified by their Age and by Family Income Less Wives' Wage and Salary Income, Canada, 1977(1)

	Age of Wife				
	15-24	25-34	35-44	45-64	Total 15-64
Family Income less Wives' Wage and Salary Income	Participation Rates				
$4,000 and under	61	60	49	34	46
4,000-7,999	55	52	46	29	41
8,000-11,999	66	58	56	34	52
12,000-15,999	61	56	55	37	52
16,000-19,999	54	54	51	42	50
20,000 and over	44	47	53	39	45
All income classes	58	53	53	37	48

(1) The participation rates are for the survey reference week of April 1978, classified by incomes registered in 1977. The definition of the family used here is the Census family.
Source: Unpublished data from the 1978 Survey of Consumer Finances, Consumer Income and Expenditure Division, Statistics Canada.

over the higher-income ranges: within the 15-24 and 25-34 age groups, wives' participation rates were lower the higher the income class, while for the older age groups this consistent negative relationship did not exist. For all wives aged 15-64, no clear negative relationship existed between wives' participation rates and family incomes less wives' earnings.

The fact that the relationship between wives' participation and husbands' incomes has become less negative in the U.S. (and almost certainly in Canada as well) suggests that the growth in female labour force participation, stemming from the variety of forces noted in Chapter 2, has cut across income classes and largely overwhelmed the original negative relationship. There has been more scope for participation rate increases among women whose husbands' incomes were relatively high; major increases have occurred in the participation rates of these groups.

In summary then, a reasonable case can be made that the observed positive relationship between female participation rate growth and aggregate real wage growth has not been a causal relationship or, if the relationship has been causal in nature, it has weakened considerably over time. In addition, the negative relationship between husbands' incomes and wives' participation rates which used to stand out clearly has been much diminished in recent years. On balance, then, the labour-leisure model which underlies much economic analysis of participation rate changes appears to be of limited usefulness in explaining the growth in aggregate female participation rates over time.